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DEVELOPING CURRICULUM MATERIALS FOR COOPERATIVE EXPERIENCE PROGRAMS IN AGRICULTURE, AGRICULTURAL OCCUPATIONS INSTITUTE 1966 WORKSHOP REPORT (JUNE 6-JULY 15, 1966).

OKLAHOMA STATE UNIV., STILLWATER, RES. FOUNDATION

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THIRTY VOCATIONAL AGRICULTURE TEACHERS FROM 11 STATES DEVELOPED THESE CURRICULUM MATERIALS FOR A 2-YEAR HIGH SCHOOL COOPERATIVE EXPERIENCE PROGRAM FOR OCCUPATIONS IN AGRICULTURAL SALES AND SERVICE, AGRICULTURAL MACHINERY, AND HORTICULTURE. A RATIONALE FOR CURRICULUM DEVELOPMENT, AN EXPLANATION OF THE CURRICULUM, AND AN EXPLANATION OF THE COOPERATIVE EXPERIENCE PROGRAM ARE PRESENTED. THE MAJOR AREAS OF THE CURRICULUM ARE (1) ORIENTATION AND HUMAN RELATIONS, (2) SALES AND SERVICE, (3) RECORDS AND CONTROL, (4) THE BUYING PROCESS, (5) ORGANIZATION AND MANAGEMENT, (6) CAREER OPPORTUNITIES IN AGRICULTURAL BUSINESS, (7) AGRICULTURAL SALES AND SERVICE, (8) AGRICULTURAL MACHINERY, AND (9) HORTICULTURE. EACH UNIT WITHIN AN AREA CONTAINS OBJECTIVES AND SUGGESTED TEACHING TIME, TEACHING TECHNIQUES, ORDER OF PRESENTATION, REFERENCES, AND EVALUATION METHODS. SUGGESTED PROJECTS FOR DIRECTLY RELATED MATERIALS, AN OUTLINE OF A PUBLIC RELATIONS PROGRAM, AND A LIST OF PUBLIC RELATIONS TOOLS DEVELOPED BY INSTITUTE MEMBERS ARE INCLUDED. (JM)

ED018607

DEVELOPING CURRICULUM MATERIALS FOR COOPERATIVE EXPERIENCE PROGRAMS IN AGRICULTURE

1966 WORKSHOP REPORT

Agricultural Occupations Institute

RESEARCH
FOUNDATION
OKLAHOMA STATE
UNIVERSITY

VT 01752

AGRICULTURAL OCCUPATIONS INSTITUTE

1966 Workshop Report
June 6 to July 15, 1966

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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DEVELOPING CURRICULUM MATERIALS FOR COOPERATIVE EXPERIENCE PROGRAMS IN AGRICULTURE

Supported by a Grant from the
U. S. Department of Health, Education and Welfare
Office of Education

PREFACE

The second workshop of the Agricultural Occupations Institute was conducted from June 6 through July 15, 1966, at Oklahoma State University. Again, the focus was on new dimensions in Vocational Agriculture. Increasing sales and services to farmers as well as complex processing and manufacturing of agricultural commodities opens varied occupational avenues to individuals with agricultural knowledge.

The 1965 workshop report contained information and forms relating to procedures necessary for the development of a cooperative experience program. The 1966 Report is concerned with curriculum development. Unit outlines developed last summer and refined during the year were welded into an overall curriculum design during this workshop.

In addition to distributive curriculum content, the members of the 1966 group developed curriculum materials for the agricultural competencies area of a cooperative program in horticulture, agricultural supply, and agricultural machinery. There is a noticeable variation in the method of presentation in these three main areas. This variation was caused by the time, effort, and creativeness evidenced by the ten members in each of the three different committees. Dr. William L. Stevenson, Vocational Education Research Coordinator; Dr. J. B. Morton, District Supervisor of Vocational Agriculture; and Donald L. Coffin, Guthrie Vocational Agriculture Teacher, acted as consultants to the agricultural competencies committees.

The thirty agriculture teachers attending the 1966 workshop represented eleven states. They will be visited and supervised during the 1966-67 school year. Observations and recommendations will be compiled by the Institute staff. Marsena Norris, Graduate Assistant, Department of Agricultural Education, will be assisting with the implementation of the institute plans.

Special recognition for the success of this 1965 workshop goes to Lucille Patton and LeRoy Ward, Instructors in the Institute; Dr. Everett D. Edington, who initiated the project; and Dr. Robert R. Price, Head, Department of Agricultural Education.

The enthusiasm evidenced by the 1966 institute members, along with their constructive attitudes, and the helpful advise of the Oklahoma Division of Vocational Education were particularly appreciated.

William L. Hull
Director
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TABLE OF CONTENTS

Page

Participants 1

Teaching Unit Concepts in Agricultural Distribution. 2

Curriculum, Cooperative Experience Programs. 12

Orientation and Human Relations. 15

- Program Orientation 16
- Human Relations 25
- Employment Orientation. 32
- Business Policies 38

Sales and Service. 42

- Advertising 43
- Display 47
- Learning About Agricultural Products and Services (Pre-approach). . 50
- The Approach. 55
- Determining the Customer's Needs: Helping the Customer Examine the Goods 58
- Answering Questions and Objections. 64
- Closing the Sale. 66

Records and Control. 70

- Arithmetic for the Salesman 71
- Taxes 75
- Regulations of Business 85
- Accounting and Control. 87

The Buying Process 90

- Principles of Buying. 91
- Sources of Supply 95

Page

Transportation and Storing Agriculture Products. 97

Pricing Agricultural Products and Services. 100

Organization and Management 103

Preventing Accidents and Handling Emergencies. 104

Location, Store Layout, and Organization 107

Store Ownership. 111

Improving an Agricultural Related Business 118

Career Opportunities in Agricultural Business 121

Occupational Information 122

Modern Agriculture 126

Exploring Occupations. 131

Opportunities in Agriculture 141

Planning An Occupational Future. 143

Subject Matter and Associated Occupations. 144

Directly Related Curriculum 147

Agricultural Supply--Sales and Service. 149

Feeds. 150

Crop, Lawn, and Garden Seeds 153

Fertilizers. 157

Agricultural Chemicals 160

Petroleum and Petroleum Products 162

Veterinary, Large Animal, Poultry, and Pet Supplies and Equipment. . 164

Electrical Supplies. 165

Plumbing Supplies. 166

Nails, Screws, Bolts, Hinges 167

Small Tools. 168

Miscellaneous--Batteries, Oils, and Small Motors 169

Page

Building Materials. 171

Lumber. 172

Fencing 173

Paints. 174

Agricultural Machinery 177

Utility Man 178

Set-up and Deliveryman. 179

Mechanic's Helper 181

Mechanic. 183

Shop Foreman and Assistant Shop Foreman 185

The Parts Men 186

Sales Trainee and Salesman. 187

Sample Lesson Plan, "Agricultural Machine Mechanic's Helper". 189

Horticulture 202

Plant Growing Structures, Planning, Design and Maintenance. 203

Maintaining Plant Growing Structure 204

Propagation in a Greenhouse 205

Sample Lesson Plan, "Vegetative Propagation". 210

Growing Vegetables in the Greenhouse. 216

Media for Vegetable Production in the Greenhouse. 217

Potted Plants in the Greenhouse 218

Selecting Fertilizer for Potted Plants. 219

Nursery Management. 220

Introduction to the Nursery Business. 225

Lawns and Turf. 228

Ornamental Horticulture 229

Planting and Transplanting. 233

Page

Landscape Design 236

Sample Lesson Plan, "Landscape Design" 237

Cut Flowers in a Greenhouse 240

Suggested Projects for Directly Related Materials 242

Public Relations Program 247

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Oklahoma State University
June 6 - July 15, 1966

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TEACHING UNIT CONCEPTS IN AGRICULTURAL DISTRIBUTION

William L. Hull, Oklahoma State University

Curriculum design involves a multiplicity of concepts and demands an awareness of circumstances inherent in the educational setting in which the information will be taught. This brief review of curriculum ideas only begins to suggest ways in which an educational program in agricultural distribution could be implemented in a local community.

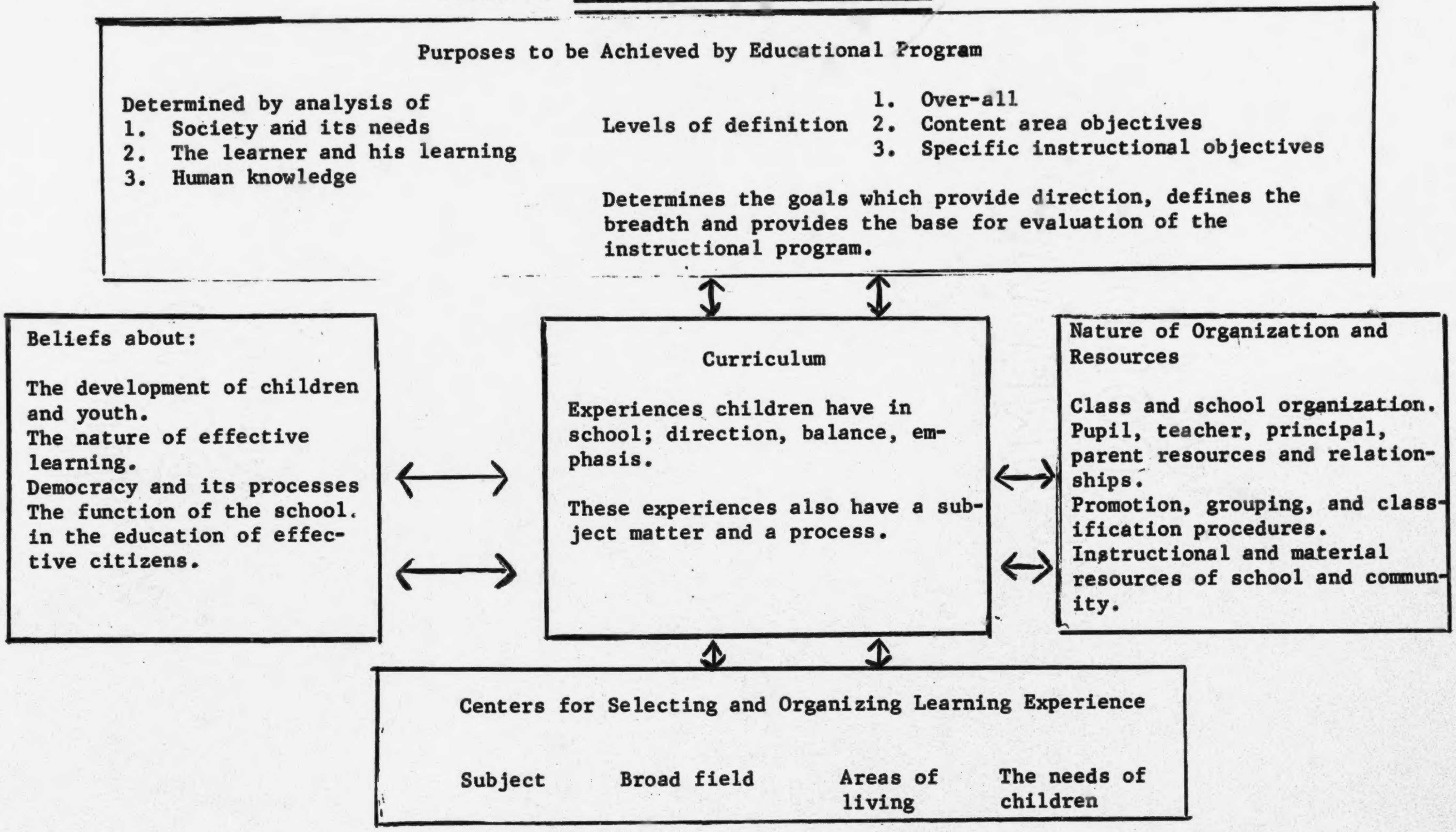
A Framework for Curriculum Construction

The term "Curriculum" generally refers to all the learning experiences of the students both in and out of the school system. In this paper, curriculum refers only to the organization of instructional units arranged in such a manner to provide learning experiences which develop the student to the greatest extent within the limits of the student's abilities.

Vocational agriculture teachers planning to use the units of instruction suggested in this publication should be aware of the environmental factors inherent in any particular local situation which impinge on their full and effective use. Curriculum design is a statement of the cooperative effort and pattern or relationships which exist among the elements of curriculum. Figure 1 illustrates the interaction of the elements which must be considered at all times. A curriculum(3) should have as its major focus the problem of selecting, organizing, and teaching learning experiences.

The school's philosophy of vocational education as articulated by the Board of Education through the Superintendent will affect its allocation of monies and support for the vocational agriculture curriculum. A statement of philosophy attempts to define the nature of a good life and a good society.(6) Such definitions are likely to show up in the purposes to be

FIGURE 1. CURRICULUM CONSTRUCTION MODEL



Purposes to be Achieved by Educational Program

Determined by analysis of
1. Society and its needs
2. The learner and his learning
3. Human knowledge

Levels of definition
1. Over-all
2. Content area objectives
3. Specific instructional objectives

Determines the goals which provide direction, defines the breadth and provides the base for evaluation of the instructional program.

Beliefs about:

The development of children and youth.
The nature of effective learning.
Democracy and its processes
The function of the school.
in the education of effective citizens.

Curriculum

Experiences children have in school; direction, balance, emphasis.

These experiences also have a subject matter and a process.

Nature of Organization and Resources

Class and school organization.
Pupil, teacher, principal, parent resources and relationships.
Promotion, grouping, and classification procedures.
Instructional and material resources of school and community.

Centers for Selecting and Organizing Learning Experience

Subject | Broad field | Areas of living | The needs of children

Source: Herrick, V. E. and Tyler, R. W. Toward Improved Curriculum Theory, p. 43

achieved by the educational program. Should the Vocational Agriculture Department adjust to the demands of its clientele, accept the values and program as it has been over the years, or try to improve its program and services to the educational community? Such a philosophic question faces every teacher in the system.

The prevailing beliefs about the development of children, the nature of curriculum organization for effective learning, and other attitudes of the school staff influence what goes on in the classroom. Every teacher has a psychology of learning which gives a perspective on the nature of the learning process, how it takes place, under what conditions, what sort of mechanisms operate and the like.

The social and economic conditions which compose the environment of each child set the limits within which every teacher must work. The relationship of one child to another, the attitude toward teachers, and other factors inter-relate to form the backdrop for the educational setting. The organization of classes in the school and the scheduling of students can do much to maintain an environment conducive to learning in the classroom.

There are four common approaches to curriculum organization:(3) the subject, the broad-field, the problems-of-living, and the needs approach. The subject curriculum assumes the acquisition of understandings and intellectual disciplines are the best insurance of a good life and citizenship in a democratic society. The broad-field approach attempts to inter-relate concepts of knowledge in order to introduce generalizations. In some schools, the curriculum is organized around areas of living: health, leisure, vocations, citizenship, etc. Many different types of programs are constructed around the needs of children. The core approach to children's interests and needs attempts to operate on the basis of centers of pupil interest, activities, units of work, or life-situations. Probably no single organizing principle is adequate for all types of outcomes which may be desired.

Learning experiences themselves(3) are the most significant concern for the teacher constructing a curriculum. They become, in fact, the organizing elements. All problems of curriculum design hinge upon the nature of the types of learning experiences desired. The following are guides for judging learning experiences:(3)

Nature of the Outcomes. Many kinds of learning outcomes do not result automatically from the study of the usual school subjects. Direct and specific provision must be made for such outcomes.

Social Demands. Citizens moving into responsible positions require experience in the weighing of values, the making of criticized and evaluated judgments, and the undertaking of personal sacrifices for the common good.

Learning and Growth. Pupils react as a total organism. Consequently, potentialities and growth patterns vary greatly from individual to individual. This suggests considerable variety and flexibility in the experiences provided, if the needs and possibilities of the individual learner are to be met.

Cultural Heritage. Every society includes certain information basic to its survival. The great body of skills necessary to comprehend the cultural environment in which people live should be taught in every curriculum.

In summary, a curriculum should be designed to produce the maximum cumulative effect on the learner. It should encourage rather than inhibit pupil motivation. Four major tasks are involved to do this: the formulation of educational objectives or goals, the selection of learning experiences that are likely to attain the objectives, the organizing of learning experiences effectively and efficiently, and evaluation.

Area Concepts In Distributive Education

Distributive education instruction has traditionally taken an areas of living approach to curriculum design. In many respects vocational education parallels the economic system of society. Production, distribution, and consumption are seen as the prime factors in the economy. Distribution has the responsibility of channeling goods and services to consumers. It supplies an important connecting link between the two other basic functions.

A study of distribution relates to an investigation of the broad general processes inherent in the system. The discipline of distribution includes a study of the kinds of organizations performing distributive functions; a study of marketing, including buying, selling, pricing, wholesaling, retailing; a study of the factors affecting marketing, including market research, advertising, visual merchandizing, business location, customer services, government regulations; a study of various financial aspects of distribution, including capital structure, credit, and records; and a study of the place of the consumer in the marketing process. Properly presented, this basic body of knowledge is readily applicable to a wide range of distributive occupations.

In addition to a study of the processes of distribution, D. E. students study information relating to knowledge of the product they are selling or distributing. Since products studied may vary widely and include many different kinds and types, much of this instruction is individual study.

Distributive occupations frequently bring the employee into face to face contact with the public. Many competencies are required in addition to knowledge of processes and products:(1)

> First, there is a social competency. One engaged in distribution has a set of personal characteristics which are vocationally relevant. Distribution is characterized as being people-oriented, not machine-oriented, and as such, human relationships are of paramount importance. Personal appearance, traits, attitudes, all add up to this social competency which becomes a qualifying factor in employment.
>
> Second, there is a basic skill competency. One engaged in distribution makes constant application of the basic skills of communications and mathematics to his employment situation. The whole field of distribution involves around communications. This fact places a premium on one's facility with these tool subjects as a basis for employment in distribution.

Third, there is a technology competency. One engaged in distribution is intimately associated with a specialty, typically a product or service. The degree of success is dependent upon the knowledge he possesses of this specialty which, in view of the growing complexity of products and services being produced in the economy, we may refer to as his technology. A functioning knowledge of this technology, whether it be furniture, insurance, fabrics, automobiles, petroleum or data processing, becomes the focal point upon which other knowledges and skills are applied.

Fourth, there is a marketing competency. One engaged in distribution has demonstrated accomplishment in the performance of one or more of the functions of distribution which are, in summarized form, selling, sales promotion, buying operations, market research, and management. While the immediate job responsibility is generally centered on one of these functions, an accomplished worker has understandings and appreciations of all the functions operating within the business enterprise. Out of these functions and supplemental understandings about distribution come the body of knowledge which we call the discipline of distribution.

It is certainly not to be implied that these four groups of competencies would be taught in a Distributive Education Program. The need for the technology competency shows the great relationship of distributive education to other areas, such as agriculture, industry, and home economics, for it is in these areas that are taught many of the technologies needed by distributive workers.

A curriculum guide from Virginia(5) suggests seven broad areas of distributive education: personnel, selling, product information, sales promotion, merchandising, marketing process, and organization and operation. These areas lead the student through an appraisal of his aptitudes and interests, an appreciation of the field of distribution, and an attainment of skills which will assist him in securing employment.

Traditionally, distributive education has been taught through a cooperative placement program. By participating in a supervised occupational experience, the student receives on-the-job training under the watchful eye of a skilled employer. Systematic instruction in class related to tasks on the job prepare the student for optimum performance as a trainee. Instructional techniques such as situation analysis, case problems, discussion exercises, business games, directed observations, and role playing will help individuals to learn from each other.

For the purposes of this workshop, committees were organized to develop curriculum materials for the following six areas: orientation and human relations, sales and service, records and control, the buying process, organization and management, and career opportunities.

Area Concepts in Agricultural Education

Traditionally vocational agriculture has concerned itself with education for establishment in farming. With the passing of the 1963 Vocational Education Act and the writing of a new objectives bulletin,(4) vocational agriculture is charged with the responsibility of preparing students for any occupation involving knowledge and skills in agricultural subjects. Consequently, the purposes of vocational agriculture instruction have changed abruptly.

In the past, vocational agriculture operated primarily at the secondary level within the public school system. Undoubtedly, the agriculture segment of the vocational education system will continue in public schools. However, increasingly important aspects of vocational agriculture are relating to the technician level of operation in community and junior colleges and the exploratory level of instruction in elementary schools. As agricultural occupations become more complex they require career development choices earlier in life and more advanced instruction in post high school.

Instead of confining vocational agriculture to the teaching of boys who are prospective farmers, the classes will be broadened to include boys and girls who can use agricultural knowledge in all aspects of living.

Agricultural knowledge can be used by many persons in occupations which support and serve production agriculture. Occupations in the fertilizer industry, agricultural machinery sales, and others require knowledge about growing plants and animals for proficiency. Many agricultural commodities sold to consumers, such as cuts of meat, require knowledge of plant and animal growth principles for the selection of quality items. The usefulness of agricultural knowledge extends to various groups of individuals.

In order for consumers as well as producers of agricultural commodities to understand and appreciate principles of plant and animal growth, the organization of agricultural instruction must involve an inter-relation of concepts. These concepts may take the form of generalization drawn from observation of instances in agriculture. The California State Department of Education(2) published a manual identifying the following biological principles in agriculture:

Matter and Energy
Living Matter
Non-living Matter
Classification
Ecology
Diffusion
Photosynthesis
Organic Cycles
Growth
Regulators of Plant Growth and Development
Pathology
Reproduction
Irritability
Germination of Seeds
Plant Nutrition
Transpiration
Movement of Substances in Living Organisms
Animal Nutrition
Nervous System
Endocrine System
Respiration
Genetics

These principles, which are generalizations based on facts, provide insight into common elements of agriculture useful to producers of commodities as well as consumers. The organization of these principles into a viable curriculum depends on the specific needs of the learners and the environment in which they live.

Concepts in Agricultural Distribution

Unit concepts in agriculture and distribution are outlined in this workshop report. Areas of distribution are identified and developed. The technical agricultural knowledge relating to Ornamental Horticulture, Agricultural Supply--Sales and Service, and Agricultural Machinery is identified and in some instances developed as unit teaching plans. The exact combination of agriculture and distribution knowledge depends on the learner needs and the situation. A suggested distribution of time for each instructional unit for a two-year curriculum in agricultural distribution is specified. It should be modified to meet local needs and conditions.

Selected Bibliography

1. Beaumont, John A. "Distributive Education - - Today and Tomorrow." Paper presented at the Governor's Conference on Education for Distribution, Indianapolis, Indiana, April 14, 1964. (Mimeograph)

2. California State Department of Education. Biological Principles in Agriculture. A manual for high school agriculture teachers integrating biological principles with instruction in agriculture, 1963.

3. Herrick, V. E. and R. W. Tyler. Toward Improved Curriculum Theory. (Chicago: The University of Chicago Press, 1950.)

4. Office of Education, OE 81011, Objectives for Vocational and Technical Education in Agriculture. (Washington: Government Printing Office, 1965.)

5. Richmond Public Schools, Richmond, Virginia. Distributive Education: An Organization and Curriculum Guide. Revised 1965.

6. Tyler, R. W. Basic Principles of Curriculum and Instruction. Syllabus for Education 305, (Chicago: The University of Chicago Press, 1950.)

CURRICULUM, COOPERATIVE EXPERIENCE PROGRAMS

The major purpose of the 1966 agricultural occupations workshop, held on the campus of Oklahoma State University, June 6 through July 15, was the formulation of a curriculum combining areas of learning necessary for employees in all types of businesses with those competencies peculiar to the agricultural business areas. Agricultural competencies, determined by a series of studies summarized at the Center for Vocational and Technical Education, The Ohio State University, were most necessary in the following major areas: horticulture, agricultural supply, and farm machinery. Therefore, curriculum development of agricultural knowledge was limited to these three main areas.

The members of the 1966 agricultural occupations workshop developed a combined curriculum for a two-year program of cooperative experience in agricultural occupations. It is recognized that most schools will offer this as a one-year course, open only to seniors; however, since students may be enrolled in the course at age 16, it is logical to assume that the cooperative experience program in agricultural occupations will soon develop into a two-year program. Those learning areas common to all types of businesses, such as salesmanship, human relations, arithmetic for the salesman, etc., are presented in the first section of this manual. It is expected that the teacher-coordinator will spend approximately half of the class time teaching areas common to all distributive employment and the other half assisting the students individually or in small groups with problems and information pertinent to their particular training station.

On the pages immediately following are blocked out courses of study for a one-year or a two-year program in cooperative experience in agricultural occupations. It is not anticipated that a person unfamiliar with the planning of the curriculum could take this time schedule and adhere to it exactly; it is only a plan by which the distributive and agricultural material may be meshed together to form a workable curriculum for this program.

You will note that during both the first- and second-year courses, at least three weeks will be spent at the very beginning of the school year to provide the students with information regarding program orientation, employment orientation, and human relations. Also, although salesmanship and sales promotion were designed to be a part of the first-year curriculum, it is also recognized that students in a two-year program will need a review in this area the second year.

The proof of the success of a cooperative experience program in agricultural occupations is the number of boys who become employed in that occupational area following high school or college graduation. For that reason, it was determined essential that occupational information be presented as an instructional unit at the end of the year with more emphasis being given to this during the last six weeks of a two-year program.

COURSE OF STUDY
(Cooperative Experience in Agricultural Occupations)

FIRST-YEAR CURRICULUM

Unit	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total
Program Orientation	5									5
Employment Orientation	9									9
Human Relations	4									4
Business Policies		8	2							10
Using Advertising as a Selling Aid			8	2						10
Display Principles and Techniques				6						6
The Pre-Approach to Selling				5						5
The Sales Approach					5					5
Finding the Customer's Needs and Desires					3					3
Helping the Customer Examine the Goods					3					3
Answering Questions and Objections						6				6
Closing the Sale						5				5
Arithmetic for the Salesman							10	10		20
Career Opportunities in Agri. Business									10	10
Product Knowledge and Development of Skills and Techniques for Individual Training Station (Individually or in Small Groups)		10	10	7	9	7	8	10	10	71
F.F.A.	2	2				2	2			8
Total	20	20	20	20	20	20	20	20	20	180

COURSE OF STUDY
(Cooperative Experience in Agricultural Occupations)

SECOND-YEAR CURRICULUM

Unit	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Total
Program Orientation	5									5
Employment Orientation	5									5
Human Relations	5									5
Advanced Selling Techniques in Specialized Areas	3	7								10
Advertising Layout and Copywriting		5								5
Window and Interior Display			5							5
Taxes			10							10
Regulations of Business				5						5
Accounting and Control				10						10
Principles of Buying					5					5
Sources of Supply					4					4
Transporting and Storing Ag Supplies						5				5
Pricing Agricultural Products and Services						5	5			10
Career Opportunities in Agri-Business								15	10	25
Product Knowledge and Development of Skills and Techniques for Individual Training Station (Individually or in small groups)		6	5	5	11	8	13	5	10	63
F.F.A.	2	2				2	2			8
Total	20	20	20	20	20	20	20	20	20	180

ORIENTATION AND HUMAN RELATIONS

This major area of study, designed to be taught to first-year students in the Cooperative Experience Program in Vocational Agriculture and reviewed for the benefit of the students the second year, was compiled by the following committee:

L. W. Smith, Chairman
Lawrence J. Venner
George D. Head
George Dowell
Odell Miller

Units of this major area of study include: Program Orientation, Human Relations, Employment Orientation, and Business Policies. These are essential elements which, in the opinion of the 1966 Agricultural Occupations Institute members, should be taught as early in the school year as possible to the beginning student in a cooperative experience program. The units were further broken down as follows:

Program Orientation
  Background of Vocational Education
  Importance of Agriculture
  Course Content of the Cooperative Experience Program

Human Relations

Employment Orientation
  Applying for a Job
  Forms Necessary
  Labor Laws

Business Policies

The members of the committee decided that a minimum of 28 hours of teaching time was necessary for the presentation of this information to the beginning student. It was also determined that it would take approximately 15 hours of review in this area for the second-year student. No teacher-coordinator is expected to follow this time schedule explicitly; the amount of time spent on each major area of study will be determined by the needs of the student.

MAJOR AREA: ORIENTATION AND HUMAN RELATIONS

UNIT: PROGRAM ORIENTATION

OBJECTIVES:

I. To develop in the student an understanding of the purpose of supervised occupational experience programs.
II. To develop in the student a wholesome attitude toward supervised occupational experience programs.

SUGGESTED TEACHING TIME: 3-5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Lecture and demonstration
II. Flannel graph
III. Field trips to businesses of Coop students
IV. Former student speaker as resource
V. Films or slides
VI. Overhead projector
VII. Charts prepared

SUGGESTED ORDER OF PRESENTATION:

I. Background of Vocational Education

A. Why is it important to understand the background of vocational education?

1. There are many very intensive studies under way determining justification of and development of sound vocational programs.
2. As workers or students in the program it is of value to have some understanding of HOW and WHY this program developed.

B. What is Vocational Education?

1. Vocational Education is that which aims at the development of human abilities in terms of knowledge, skills, and understandings so that the individual may serve happily and efficiently in carrying on the activities in the vocational pursuits of his choice.
2. Vocational Education in Agriculture would thus be that which aims at training for placement of students in the business of Agriculture.
3. Vocational agricultural occupational training would be to train a student in a specific occupation relating to production agriculture.

C. The need for the development of vocational education has been recognized on numerous occasions by Congress, as indicated by the passage of a number of acts.

1. What were the major acts passed relating to agricultural education?

- a. Smith-Hughes Act of 1917.
  This act required supervised farming programs.
- b. George-Barden Act of 1946.
  This act increased funds to vocational agriculture.
- c. Vocational Education Act of 1963
  This act amends the George-Barden and Smith-Hughes acts in the following important ways for vocational education in agriculture:

  - (1) Training in vocational education in any occupation involving knowledge and skills in agriculture subjects.
  - (2) A student does not have to have the supervised farming program on the farm.

Note - The flannel graph or overhead projector could be used to an advantage in presenting history of vocational acts above.

II. Importance of Agriculture

- A. Career prospects for young people

  1. Are limited only by student's willingness and ability to learn and study for self-advancement.
  2. Are limited only by the educational opportunities which are available to him.

- B. Job opportunities to expand in years ahead. (You may use Fig. 1, "The Agricultural Chain," as an overlay to present data.)

  1. Supplying and Servicing Farmers - 6,000,000 workers
  2. Farming and farm workers - 7,000,000 workers
  3. Handling and processing farm produce - 10,000,000 workers

  (You may use Fig. 2 - "15,000 New Jobs in 8 Fields" as an overlay or print the data on large card board charts to present.)

  4. College graduates are needed for over 15,000 jobs each year.

     - a. About 8,500 are being supplied.
     - b. There are eight major areas or fields.
     - c. From the chart you can see this field is big.
     - d. There are over 500 distinct occupations in the eight major fields.

  5. 40% of all jobs are in agriculture.

     - a. Jobs important to everyone
     - b. Jobs with futures
     - c. Jobs with financial and personal rewards

- C. The Nucleus of Agriculture is Farming and Ranching.

  1. 58% of U.S. land area is in farms.
  2. 3.7 million farms in the United States

3. Allied industries employing 40% of working population
4. Total assets in excess of 207 billion dollars
5. 36 billion dollars worth of products marketed in 1962
6. Assets more than two-thirds the market value of all corporation stocks listed on the New York Stock Exchange

(You may wish to use the statistics quoted in this report for charts or graphs in class. Please remember that these figures need to be updated periodically for complete accuracy.)

D. Agriculturists Provide Supplies Used by Farmers

1. Farmers purchase over 25 billion dollars worth of production items each year.

    a. $1.5 billion in fertilizer and lime
    b. $3.5 billion in fuel, lubricants, and maintenance
    c. $2.6 billion in machinery and motor vehicles
    d. $5 billion in feeds
    e. 25 billion KWH of electricity

2. Agricultural occupations among the suppliers to farmers include:

    a. Product development engineers and scientists
    b. Manufacturing management personnel
    c. Sales personnel including advertising and promotion
    d. Service personnel

E. Agriculturists Provide Services to Farmers

1. The farmer of today is surrounded by a host of assistants requiring a knowledge of farming.

    a. Providers of finance
    b. Providers of technical services
    c. Education, regulatory, and advisory personnel
    d. Providers of facilities

F. Agriculturists Handle the Produce of the Farms

1. The Department of Agriculture estimates that more than 10 million workers are engaged in transporting, processing, manufacturing and selling farm goods.

    a. Farm to market transporters
    b. Contractors and buyers of farm products
    c. Salesmen representing farmers
    d. Processors of farm goods

(You may wish to use Fig. 3 on productivity level of the American farmer and 6% farmable land in the world which produces 17% of the world's total food output. An overlay is suggested.)

2. More than $36 billion worth of farm products are marketed each year.

    a. 45 billion quarts of milk
    b. 5 billion dozen eggs
    c. 34 billion pounds of meat
    d. 97 billion pounds of fruits and vegetables

(It is recommended to show the film "A Step Ahead," color, 12 min., narrated by Chet Huntley from the New Holland Implement Co.)

G. Education in Agriculture is Important to You the Student

1. The very nature of modern agriculture requires that the student receive training in the sciences that involve animals, plants, and soils.
2. The training extends further to give emphasis to such technological phases as selection, operation, care, and maintenance of farm machinery, and mechanical skills.
3. Record analysis, and decision making on the basis of records is emphasized.

H. The Product of Vocational Education in Agriculture

1. He is a well-rounded individual with basic preparation for a wide horizon of agricultural occupations. He is trained in the sciences, skills, and management aspects of agriculture. His high school curriculum generally has been such that upon graduation he is qualified for college entry. He is developed in poise, is self-confident, and able for leadership. He has a sense of responsibility for his family, his community, and his country. Scholarship, cooperation, good citizenship, and patriotism are developed through the FFA.

III. Course Content of Cooperative Experience Program in Agricultural Occupations.

A. State requirements for a part-time Coop student (Requirements may vary with states - check your state requirements)

1. Must be 16 years of age
2. Must be enrolled in his junior or senior year in school
3. Must be regularly enrolled in school
4. Must have the ability to profit from instruction
5. Must be employed in a legitimate non-farm occupational training station that provides experience for advancement in agricultural business
6. Must work an average of 10 hours a week at his chosen training station
7. Will be required to study directly related and indirectly related subject matter
8. Set up credit for class and work experience

B. Summation of other units and lesson plans or as arranged in individual program (may use a former student to speak on this phase of program)

C. Indirectly Related Study Class

1. The objective of this class is to enlarge the vocational knowledge, understanding, morale, and judgment of students employed in non-farm agricultural training.

D. Directly Related Study Class

1. During this class period students will study materials which directly relate to the training experiences of the position for which they are training. Examples of this type of training are:

    a. Filling out work reports
    b. Preparing merchandise manuals
    c. Preparing area of distribution manuals
    d. Completing assignment sheets of reference material for specific types of occupational experiences.
    e. Conducting studies that are applicable to the particular area in which the student is employed
    f. The youth leadership program

REFERENCES:

I. Books

Phipps, Lloyd J., Handbood of Agricultural Education in Public Schools (The Interstate Printers & Pub. Inc., 1965)

Massey-Ferguson Inc., Farming For the Future (12601 Southfield Road, Detroit, Michigan) (no charge)

*Future Farmers of America Supply Service, Agriculture is More Than Farming (P.O. Box 1180, Alexandria, Virginia) (15¢ each)

South Dakota State University, Careers Ahead (South Dakota State University, Brookings, South Dakota)

EVALUATION: (Not recommended at this point)

*Indicates best reference

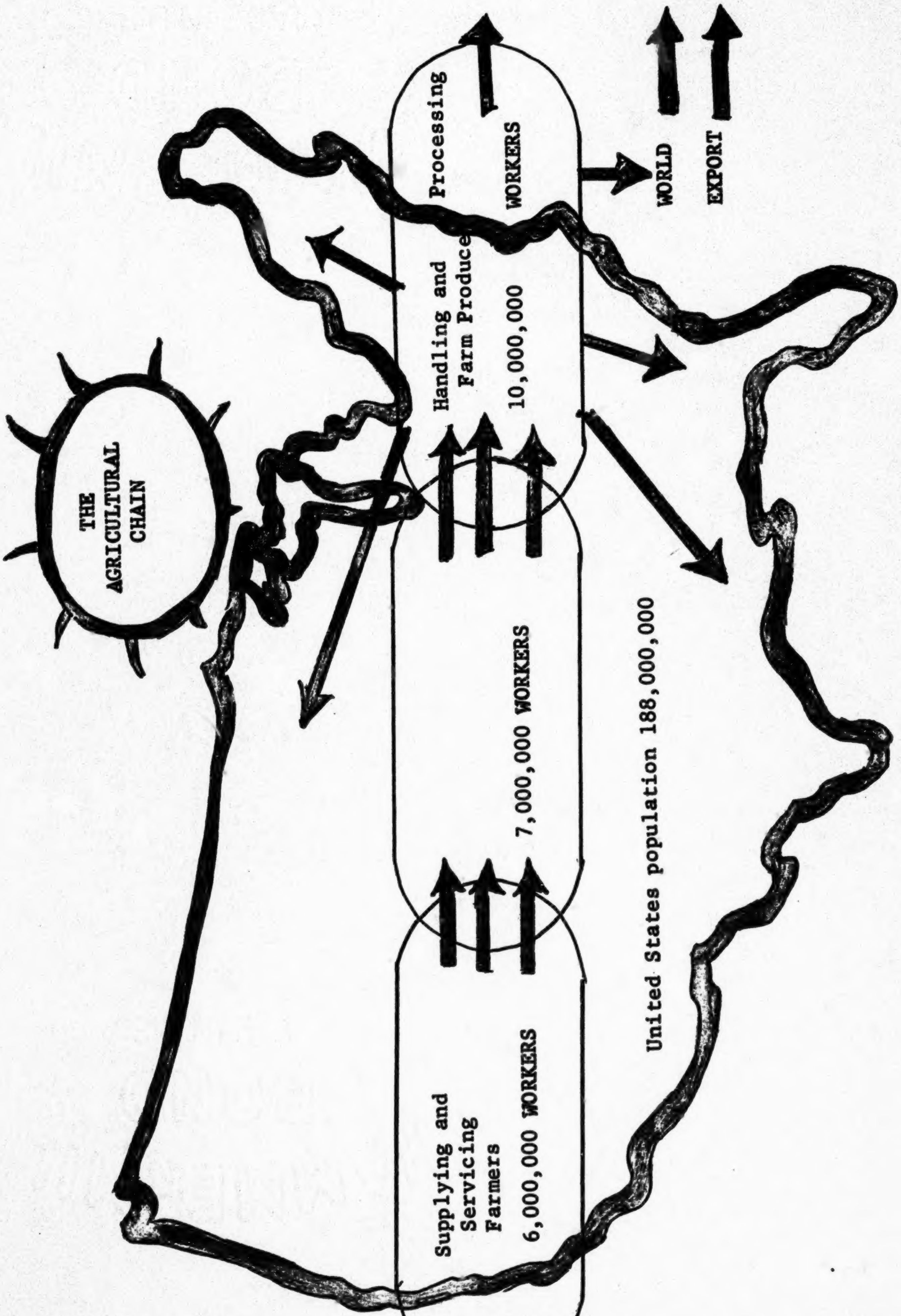

THE AGRICULTURAL CHAIN
Supplying and Servicing Farmers
6,000,000 WORKERS
7,000,000 WORKERS
Handling and Processing Farm Produce
10,000,000 WORKERS
WORLD EXPORT
United States population 188,000,000

Figure 1

EACH YEAR 15,000 NEW JOBS IN THESE 8 FIELDS

THE DEMAND:

Agriculture needs, each year

15,000

New graduates with land-grant

College agricultural education

THE SUPPLY:

Land-grant colleges each year

Graduate only

8,500

Students in agriculture

THE OPPORTUNITY:

There's a bright future

for you in agriculture.

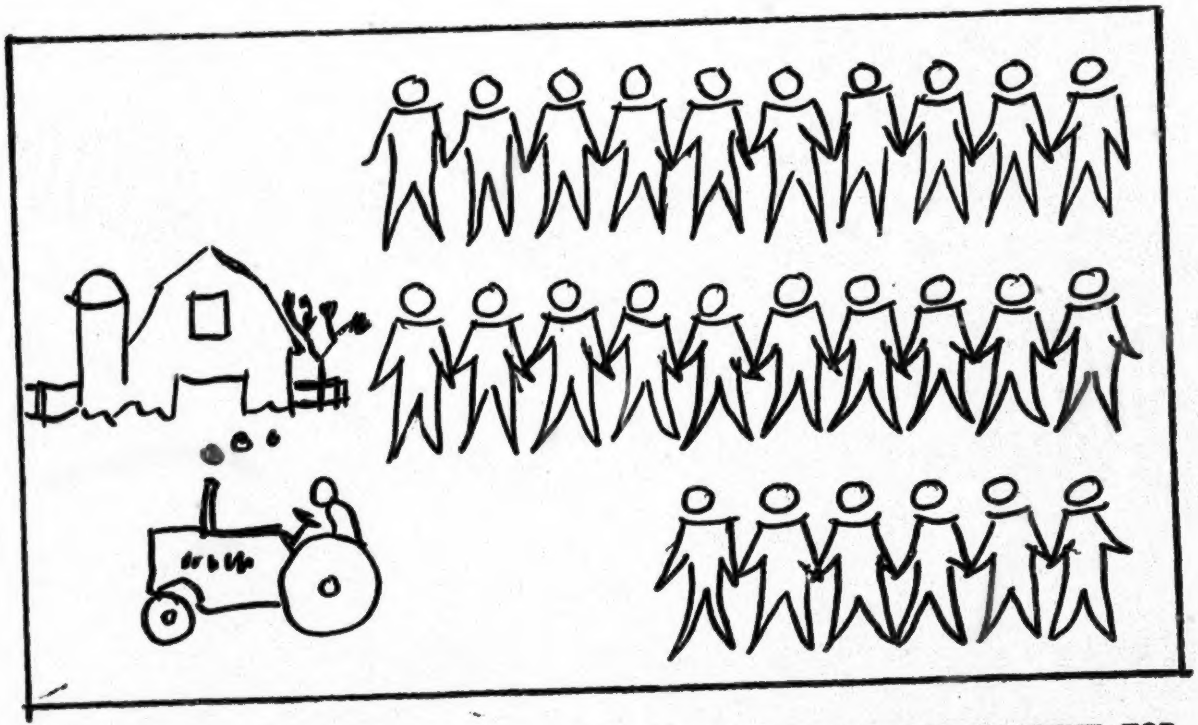
AGRICULTURAL RESEARCH	AGRICULTURAL INDUSTRY	AGRICULTURAL BUSINESS
1,000	3,000	3,000
Production	Machinery and Equipment	Banking and Credit
Marketing	Food Processing	Insurance
Economics	Grain and Seed Processing	Farm Management
Agricultural Engineering	Meat and Poultry Packing	Cooperative Management
Equipment and Utilities	Fertilizer and Lime	Land Appraisal
Processing	Pesticides and Herbicides	Grading, Packaging and Labeling
New Uses and Methods	Feed Manufacturing	Marketing
New Products	Dairy Processing	Storage and Warehousing
By-Products	Fats and Oils	Transportation
Conservation	Textiles and Fibers	Farm Utilities
Reclamation	Buildings and Utilities	Custom Services
Rural Sociology	Forest Products	Private Businesses

Figure 2

Figure 2. (Cont'd.)

AGRICULTURAL RESEARCH	AGRICULTURAL COMMUNICATIONS	AGRICULTURAL CONSERVATION	AGRICULTURAL SERVICES	FARMING AND RANCHING
3,000	500	1,000	1,500	2,000
Vocational Agriculture	Farm Reporting	Soil	Inspection and Regulation:	General
Agricultural Extension	Newspapers	Water	Food and Feed	Grain
College Instruction	Market Reporting	Range	Seed and Fertilizer	Dairy
Governmental Agencies	Publications	Forest	Agricultural Chemicals	Swine
Farm Organizations	Magazines	Fish	Plant and Animal Quarantine	Beef
Industrial Agencies	Photography	Wildlife	Quality Control and Grading	Sheep
Business Firms	Motion Pictures	Parks	Organizations and Foundations	Poultry
International Technical Aid	Radio	Turf	Agricultural Technicians	Cotton
	Recording		Agricultural Consultants	Forage
	Television		Agricultural Statisticians	Fruits
	Advertising		Veterinarians	Vegetables
	Exhibiting		Foreign Agricultural Service	Tobacco
	Training			Seeds
				Nursery
				Specialty

Figure 3



ONE AVERAGE FARMER PRODUCES FOODS OF HIGH-PROTEIN CONTENT FOR HIMSELF AND 26 OTHERS IN THE U.S.

ONE AVERAGE RUSSIAN FARMER PRODUCES A 75% STARCH PRODUCT FOR 6 OTHERS

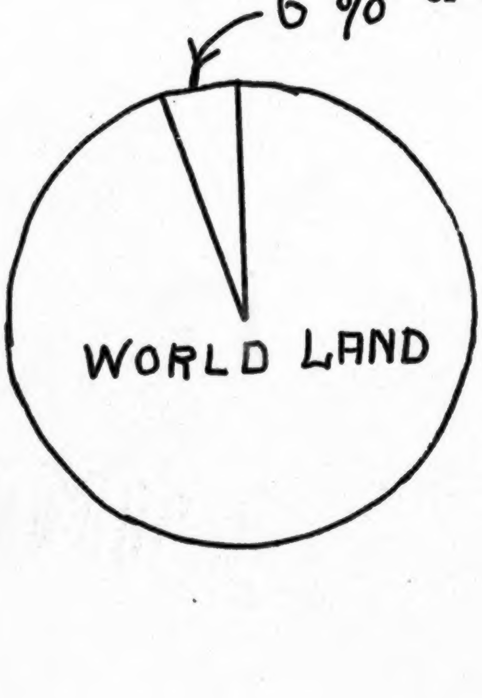
U.S. HAS

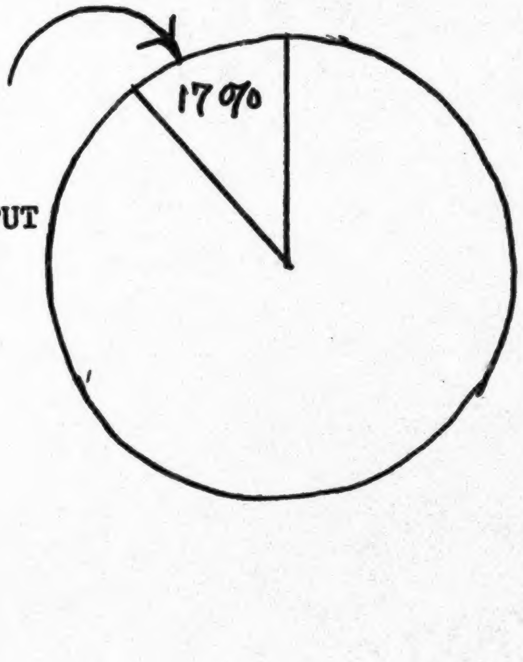
OF WORLD LAND --

AND

PRODUCES 17% OF

WORLD'S TOTAL OUTPUT





MAJOR AREA: ORIENTATION AND HUMAN RELATIONS

UNIT: HUMAN RELATIONS

OBJECTIVES:

I. To communicate effectively
II. Develop approved standards of personal conduct and appearance.

SUGGESTED TEACHING TIME: 4 hours

SUGGESTED TEACHING TECHNIQUES:

I. Role playing
II. Inventory of your personality
III. Pre-quiz
IV. Film
V. Tape recorder

SUGGESTED ORDER OF PRESENTATION:

I. Developing a winning personality

  A. Physical appearance (present check list No. 1)

    1. Facial expressions
    2. Posture
    3. Poise or self-control
    4. Grooming

  B. Voice and speech ([illegible] No. 2)

    1. Distinct
    2. Moderate speed
    3. Vary in pitch

  C. Character traits

    1. Honesty and dependability
    2. Loyalty
    3. Resourcefulness
    4. Imagination
    5. Enthusiasm
    6. Courtesy
    7. Tact

II. Getting along with your fellow workers

  A. Why do people work? (present check list No. 2)
  B. How to reach these goals?
  C. What do workers need?

    1. Sense of humor
    2. Industry and ambition
    3. Friendliness and cherrfulness

    4. Sense of fair play
    5. Cooperative attitude

III. Relations with superiors at all levels

  A. Employment is a two-way street--employer

    1. Space and equipment
    2. Training
    3. Other non-financial benefits
    4. Financial benefits

  B. Something in return--employee

    1. Regular attendance
    2. Business rules and policies
    3. Respect for authority
    4. Good personal characteristics

  C. Getting along with boss

    1. Be sold on the aims of the business
    2. Make good use of constructive criticism
    3. Be loyal to supervisor
    4. Carry out responsibilities
    5. Contribute new ideas

  D. Start on the right foot

    1. Show enthusiasm
    2. Go more than half-way
    3. Don't overlook anyone
    4. Ask intelligent questions
    5. Be alert
    6. Learn names
    7. Show interest

IV. Maintaining good relations with employers, co-workers and customers.

  A. People are different

  B. Recognize unpredictability

  C. Admit mistakes

  D. Be loyal

  E. Earn what you get

  F. Benefit from supervision

  G. Problem solving

REFERENCES:

I. Books

*Weyant, Hoover, McClay, Agricultural Business and Industry (The Interstate--Second Edition)

"Course of Study in Non-farm Agricultural Occupation," University of Kentucky

Levin, Noel, Arnold, Successful Labor Relations (Fairchild 1963)

Wingate, Nolan, Fundamentals of Selling, pp. 185 and 214 (South-Western Publishing Company)

II. Films

"Getting Along With Others," 16mm film, 29 minutes, OSU Film Library

EVALUATION: By use of tape recorder
Role playing

*Indicates best references

CHECK LIST NO. 1

PHYSICAL CHARACTERISTICS

____Dirty fingernails
____Dirty hands
____Beard
____Yellow or unclean teeth
____Visible blackheads
____Pimples on face
____Dirty neck
____Dirty ears
____Greasy hair
____Dirty scalp
____Dandruff
____Hair too long
____Ragged fingernails
____Dirty shirt
____Soiled underclothes
____Baggy trousers
____Unshined shoes
____Dirty, dusty shoes
____Body odor
____Halitosis
____Too few baths
____Inappropriate clothes
____Stooped shoulders
____Awkward posture
____Hair not combed
____Greasy skin
____Broken shoestring
____Buttons missing
____Clothes fitting poorly
____Dirty handkerchief
____Dirty collar and cuffs
____Run-over heels

*NUMBER OF CHECKS ____

If you checked fewer than 5 items, you are neater and better groomed than the average student.
Between 5 and 8----average
Between 8 and 15----below average
More than 15----pretty bad shape

*Note: It is suggested that the evaluation on the number of checks not be given to the student until after he has checked himself. This is a self-evaluation and not to be signed by the individual, if handed in.

Source: Course of Study in Nonfarm Agricultural Occupations. Department of Agricultural Education, University of Kentucky, 1965, p. 171.

CHECK LIST NO.

INVENTORY OF YOUR PERSONALITY

_____1. Do you tend to argue when someone gives his point of view with which you disagree?

_____2. Can you always trust yourself when handling money that is not yours?

_____3. Do you usually hate to see the other fellow get promoted or get something you don't have?

_____4. Do you usually want to share your responsibility with someone?

_____5. Are you easily discouraged?

_____6. Do you go out of your way to give assistance to friends?

_____7. Do you tell people who have done you a favor that you appreciate it?

_____8. If you dislike a person, do you enjoy telling him what you think of him?

_____9. Do you usually feel tired and dull?

_____10. Do you generally have to be coaxed to talk about yourself or the things you have done?

_____11. Can you stand to have someone else, other than a close friend, be the center of attraction in a crowd?

_____12. Have you ever copied from someone else in any of your school work?

_____13. Are you willing to devote extra time and effort to your work even though it means giving up some pleasure?

_____14. Can you always be depended upon to carry out an assignment without assistance from anybody?

_____15. Do you feel as ambitious at 3 o'clock in the afternoon as you felt at 10 in the morning?

_____16. Are you always glad to help new people in their school work, in finding their way around, and in meeting other people?

_____17. Have you often gone out of your way to express gratitude to someone?

_____18. Would you sooner quit a job than be "bawled out" by your employer?

_____19. Are you always cheerful when you are trying to "cheer up" your friend?

_____20. Are you inclined to tell a bigger story than the other fellow?

_____21. Do you ever cross the street to avoid meeting people you do not like?

_____22. Do your friends ever trust you with their personal belongings?

_____23. If you worked in a store and your neighboring clerk, whom you knew rather well, wanted to exchange lunch hours, would you object?

_____24. Do you seek and depend upon the advice of others in most things which you are asked to do?

_____25. Are you anxious to get to work or start a project which you know is going to take a long time?

_____26. Do you avoid the responsibility of offering your time and services for such things as Red Cross, Community Chest, and other similar groups?

_____27. If a customer should call your attention to a mistake you had made in favor of the store, would you thank him?

_____28. When your friends and the people you meet are sad or unhappy, does this tend to make you unhappy?

_____29. If you were working in a store, could you restrain your feelings toward a customer if he made you show him 20 samples of some item and then refused to buy any?

_____30. Do you exaggerate your abilities when talking at home or to friends?

_____31. Have you ever shut off the radio or television or changed stations because you could not stand the program, even though others in the room may have been listening?

_____32. Have you ever misrepresented the facts to your parents or friends in order to get them to allow you to do something?

_____33. Do you habitually eat in the presence of others without sharing with them?

_____34. If you were going to buy some clothes for yourself, would you ask someone to go along, other than your parents, to help you buy?

_____35. Can you stick to a tiresome task for a long time without someone prodding or encouraging you?

_____36. Do your parents and your employer have to tell you everything they want you to do?

_____37. Are you slow to show your appreciation to someone for courtesies because you do not want to feel obligated to him?

_____38. Is it hard for you to refrain from whistling, stamping your feet, or loud clapping when you are asked to stop in assembly, in a show, or in other public places?

_____39. Can you take fair criticism smiling?

_____40. Do you ever hesitate to offer your services for something because you feel you might not do the job correctly?

_____41. Can you stand to have someone younger than you give you good advice?

_____42. If you were selling feed that was 60 per cent wheat, and the customer asked if the feed were wheat, would you be telling the truth if you answered YES?

_____43. Do you share your prized possessions or lend them to others?

_____44. Can you make hurried decisions alone without outside help?

_____45. Are you one of those who never do anything today that can be put off until tomorrow?

_____46. Are you willing to give up your spending money for a worthy cause?

_____47. Do you pass out compliments in the hope of receiving one yourself?

_____48. At church or Sunday school, do you give your undivided attention to the minister or teacher?

_____49. Does the weather usually affect your disposition?

_____50. Have you ever "invited yourself" to visit or go along with a group when an invitation was not forthcoming?

Circle the numbers below where your answer did not agree with the one decided upon in class.

Total the numbers circled, and note the personality traits in which you showed the greatest weaknesses.

Personality Traits	Question Numbers					Total Number Circled
Forebearance	1	11	21	31	41	_______
Integrity	2	12	22	32	42	_______
Unselfishness	3	13	23	33	43	_______
Confidence	4	14	24	34	44	_______
Vigor	5	15	25	35	45	_______
Helpfulness	6	16	26	36	46	_______
Gratefulness	7	17	27	37	47	_______
Self-restraint	8	18	28	38	48	_______
Cheerfulness	9	19	29	39	49	_______
Modesty	10	20	30	40	50	_______

Note: Use this chart to analyze and improve your weak points.

Source: Course of Study in Nonfarm Agricultural Occupations. Department of Agricultural Education, University of Kentucky, 1965, pp. 177-180.

MAJOR AREA: ORIENTATION AND HUMAN RELATIONS

UNIT: EMPLOYMENT ORIENTATION

I. Applying for a job
II. Forms necessary
III. Labor laws

OBJECTIVES: To develop in student an understanding of the qualities necessary for employment in agriculture business.

SUGGESTED TEACHING TIME: 9 hours

SUGGESTED TEACHING TECHNIQUES:

I. Call in labor department speaker
II. Secure and pass out necessary legal forms (see Figure 1)
III. Role playing
IV. Films: Films on Social Security are available from your nearest Social Security office.
"Personal Qualities for Job Success"
O.S.U. Film Library

SUGGESTED ORDER OF PRESENTATION:

I. How to get a job

  A. Locating

    1. Employment agencies
    2. School agencies
    3. Newspaper, periodicals, ads
    4. Present employed persons
    5. Others

  B. Qualifications

    1. Personal aptitude and interest
    2. Training
    3. Previous experience
    4. Physical requirements
    5. Age
    6. Others

  C. Applying for the job

    1. Application forms
    2. Personal data sheets (see Figure 2)
    3. Letters of applications (see Figure 3)
    4. The importance of accurate, complete, neat applications

D. Securing references

  1. Persons to use

    a. Former employers
    b. Character references
    c. Previous school personnel and records

E. The job contact

  1. Letter

    a. Source of job opening
    b. Identification of job
    c. Previous experience
    d. Interest
    e. Request for personal interview

II. Personal interview

A. Impression

  1. Appearance
  2. Punctuality
  3. Forthrightness in answering questions
  4. Honesty
  5. Use of good English

B. Personal inventory

  1. Prepare for job

C. Employee information

  1. Salary (is not major consideration)
  2. Hours
  3. Vacation - holidays
  4. Employee benefits

III. Interview follow-up

A. Letter of appreciation to interviewer

IV. Succeeding on the job

A. Getting the job done

  1. Quality of and quantity of work
  2. Knowing how to work
  3. Prospective of work at hand

B. Personal traits

  1. Personality

    a. Respect for employer, fellow employees, job, customers

- b. Word description of desirable traits, (ex) honesty, tactfulness, cooperation, etc.
- c. Word description of undesirable traits, (ex) boastfulness, selfishness, argumentative, etc.

C. Appearance

1. Physical dress

D. Follow directions

E. Upgrading position

1. Additional education
2. Initiative

V. Labor laws

A. Employer liability

B. Student liability

C. Child labor laws

1. Federal
2. State

D. Social Security

E. Withholding tax

F. Workmen's compensation

G. Unemployment Insurance

H. Labor unions

I. Other restrictions

REFERENCES:

I. Books

Preparing Students for Employement in Agriculture, (Research Foundation, Oklahoma State University, 1965.)

Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture, (Ohio State University, 1965.)

Supervised Occupational Experience Programs, (New Mexico State University, 1965.)

*Agriculture Business and Industry, Weyant/Hoover/McClay.

EVALUATION: Test and observation

*Indicates best reference

Figure 1

REGULATIONS IN THE OCCUPATIONAL EXPERIENCE PROGRAM

There are so many facets of the occupational experience program that will be affected by prevailing laws, the teacher should prepare a check list in order to be sure that all phases of the program are in compliance with all of these prevailing laws and restrictions.

The following is suggested as such a check list:

1. School Liability
2. Teacher Liability
3. Employer Liability
4. Student Liability
5. Child Labor Laws
    a. Federal
    b. State
6. Social Security
7. Withholding Tax
8. Workmen's Compensation
9. Unemployment Insurance
10. Labor Unions
11. Other Restrictions

Figure 2

SAMPLE PERSONAL DATA SHEET

____________________ High School
Vocational Agriculture Department

John Jones
Box 100
Farmville, U.S.A.

Personal Information

Age: 17	Health: Excellent
Height: 5'9"	Telephone: 262-9038
Weight: 160	

Job Objective

I wish to secure a position in retail selling of agricultural products. My first preference is farm machinery and equipment sales. My second preference is in the area of agricultural chemical sales.

Note: State the kind of position you desire or the specific interest you have. Clearness of objective and clarity of expression are both important. State your interest fully but be as brief as possible.

Education

High School: Senior at Farmville High School
Major: Vocational Agriculture
Technical Skill: Three years vocational agriculture, with specific instruction in repair and adjustment of farm equipment and machinery, farm welding, public speaking, parliamentary procedure, animal science, and crop science.
Leadership Activities: Secretary of FFA, Treasurer of Sophomore class, member of Student Council.

Work Experience

Farmville Tractor and Equipment, Main Street, Farmville.
Worked in the Parts Department during the summer of 1965.
Jones farm, Box 100, Farmville.
Worked as a general farm worker on my father's farm after school and during the summers from 1960 to 1964.

Note: Briefly list all the jobs or positions you have held giving the employer's name, address, title of job, and length of service. Begin with your most recent job first.

References

Mr. Neal Groves, Manager, Farmville Tractor & Equipment Co., Main St., Farmville.

Note: Obtain permission to use names. The following is acceptable if references are not listed: "Appropriate business and personal references will be furnished upon request."

Figure 3

SAMPLE LETTER OF APPLICATION

__________________ High School
Vocational Agriculture Department

Box 100
Farmville, U.S.A.
September 20, 1966

Mr. John McAhee, Manager
Brown Farm Implement Co.
340 Main Street
Farmville, U.S.A.

Dear Mr. McAhee:

Mr. Andrews, vocational agriculture teacher-coordinator at Farmville High School, has informed me of a vacancy in the tractor and machinery parts department of your firm. I would like to submit my name for consideration for this position.

At present, I am a student enrolled in the agricultural occupations program at Farmville High School and therefore, will be available for employment after 2:00 p.m. on school days, and the entire day on Saturdays and during the summer.

I have lived and worked on a farm all my life. Last summer I worked in the parts division of the Farmville Tractor and Equipment Company. I have served as secretary of the local FFA Chapter and scholastically, I rank in the upper fourth of my high school class.

I am interested in a career in agricultural machinery sales and recognize the value of being associated with a firm of your reputation. I would appreciate a personal interview with you at your earliest convenience so you may become better acquainted with my qualifications. I will be available for an interview after 2:00 p.m. on school days and any time on Saturdays.

I may be contacted at the above address or through Mr. Andrews at the high school. I am looking forward to your reply.

Sincerely,

John Jones

Source: Planning and Conducting Cooperative Occupational Experience in Off-Farm Agriculture. The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, 1965, p. 67.

MAJOR AREA: ORIENTATION AND HUMAN RELATIONS

UNIT: BUSINESS POLICIES

OBJECTIVES:

- I. To acquaint the student with regulations and policies of the training center.
- II. To develop in the student the ability to make change correctly.

SUGGESTED TEACHING TIME: 10 hours

SUGGESTED TEACHING TECHNIQUES:

- I. Role Playing
- II. Secure person from a training center to speak to class
- III. Demonstrations (change-making)

SUGGESTED ORDER OF PRESENTATION:

- I. A business is no better than its employees. How good a business is depends upon how well the employees carry out their responsibilities. Have students check their knowledge about the following business policies: (This could be introduced by student role playing--show what should not be done and possible results, such as, smoking in an elevator.)
    - A. Policies about chewing gum, smoking, type of dress, and time off for school activities
    - B. Rules for making out the sales check
        - 1. Information on a sales check
        - 2. Uses of the sales check
            - a. Number of copies and their distribution
            - b. How the sales check copy is used in billing
        - 3. Making the correct change. (This could be introduced by student demonstrations: a student gives a customer too much change--not enough change.)
            - a. Figuring correct change on practice sheet
            - b. Suggest a routine for making change and counting it back to the customer (see Figure 1)
            - c. Repeat the amount of sale
            - d. Call back the amount of money received
            - e. Place the bill on the register plate while making change
            - f. Ring up the amount and check for accuracy
                - (1) Be sure register key board is clear
                - (2) Ring up but check for accuracy on indicator before hand
                - (3) Build change to amount received
                - (4) Place change on cash register plate

(5) Put bill in cash drawer under the proper clamp
(6) Close drawer
(7) Wrap customer's purchase, being sure to put the cash receipt in the bag
(8) Count change back to customer
(9) Hand purchase to the customer
(10) Thank customer with a smile and in a pleasant tone of voice

II. Personnel policies

A. Methods of compensation

B. Opportunities for promotion

C. Training opportunities for employees of organization

D. Vacations, insurance, and other employee benefits

III. Buying policies and responsibilities

IV. Selling policies and responsibilities

V. Supervision

VI. Credit and collection policies

VII. Store maintenance responsibilities

VIII. Delivery policies

IX. Product maintenance and repairs

X. Receiving and checking of merchandise

After this unit has been completed, give each student a copy of "Store Do's and Don't's." (See Figure 2)

REFERENCES:

I. Books

Robinson and Blackler, Store Salesmanship, pp. 129, 204-05, (Oklahoma State University), Preparing Students for Employment in Agriculture, pp. 15-16.

*Richert, Retailing Principles and Practices, pp. 85-92, 100-106.

SUGGESTED EVALUATION:

I. A practical test could be used for change-making

*Indicates best reference

Figure 1

Complete the following problems by making change according to the addition method. The form is provided for your convenience, but the procedure is exactly the same as shown in the example. In adding, begin with the coins of smaller denomination.

Money Tendered	Total Purchase	Change in Coins					Change in Bills					Total Change
		1¢	5¢	10¢	25¢	50¢	$1	$2	$5	$10	$20	
$2.00	$ .61	4		1	1		1					$ 1.39
10.00	5.22											
20.00	1.64											
2.01*	.26											
10.00	8.77											
1.00	.39											
1.50	1.13											
2.00	.77											
7.75	7.52											
2.00	1.04											
5.00	3.82											
50.00	23.45											
.52*	.42											
20.00	6.05											
5.00	.23											
2.00	.34											
1.00	.12											
10.00	8.35											
4.50	4.11											
6.75	6.52											
5.00	1.11											
10.00	.74											

*When the customer tenders extra pennies with his payment, he usually is trying to avoid getting odd pennies in his change. Deduct the pennies from the purchase price and return the difference by the addition method, disregarding the odd pennies in the money tendered.

Figure 1

DO'S AND DON'TS FOR STUDENT EMPLOYEES

DO

1. Be on time to work
2. Smile
3. Ask questions
4. Do what you say you will
5. Make suggestions
6. Talk with employer about problems, not someone else
7. Use "Hello," "Thank you," "Yes, sir," - not slang
8. Keep your eyes, ears open
9. Be cheerful
10. Talk in terms of others
11. Be energetic
12. Be neat
13. Show an interest
14. If hurt, tell employer *at once*

DON'T

1. Smoke while waiting on customers
2. Smoke in warehouse
3. Eat on the job
4. Hang around cash register
5. Argue-guess-gossip-complain
6. Say, "I don't know," rather, "I'll find out."
7. Talk on price alone
8. Talk down to people
9. Be an expert
10. Make personal phone calls--or receive them
11. Have buddy come by for visit
12. Give credit--refer to employer

Source: *Course of Study in Nonfarm Agricultural Occupations*. Department of Agricultural Education, University of Kentucky, 1965.

SALES AND SERVICE

This major area of study was designed to be presented to first-year students in the Cooperative Experience Program in Vocational Agriculture. It is also expected that review of salesmanship essentials will be necessary for the second-year student. Prospective employers in all areas of agri-businesses indicated knowledge of salesmanship principles as one of the most important areas in which they expected training on the part of the coop student. This major area of study in the first-year curriculum was compiled by the following committee:

Harold Gregory, Chairman
Robert Crawley
Mickey Nolen
James J. Hubbell
Richard Meder

The members of this committee planned the course content in this major area to include the presentation of the product both through visual merchandising and individual selling. Further break-down of the major area into teaching units is as follows:

Advertising

Display

Learning About Agricultural Products and Services (Pre-approach)

The Approach

Finding the Customer's Needs and Desires

Helping the Customer Examine the Goods

Answering Questions and Objections

Closing the Sale

It was decided that a minimum of 43 hours teaching time was necessary for the adequate coverage of this major area of study. Again, this depends on the need and occupational experiences of the individual students.

MAJOR AREA: SALES AND SERVICE

UNIT: ADVERTISING

OBJECTIVES:

I. To teach the student the advantages of advertising
II. To teach the student how advertising has paid its way
III. To teach the student the methods of advertising
IV. To teach the student how to measure the advantages of advertising

SUGGESTED TEACHING TIME: 10 hours

SUGGESTED TEACHING TECHNIQUES:

I. Examples of different kinds of advertisement to show what you are talking about
II. Have students bring to class different forms of advertisement
III. Have two films on advertisement--Pepsi Cola, Coca Cola, or Associated Grocery
IV. Have an advertising layout person speak to the group
V. Have students make up advertisements

SUGGESTED ORDER OF PRESENTATION:

I. Introduction

  A. Kinds of advertisement

    1. Symbols
    2. Printed

  B. History of advertising

  C. Total expenditures for advertising

II. Who pays the vast advertising expenditures

  A. Beginning company

  B. Established company

III. Purposes of Advertising

  A. To sell goods

  B. To get nearer the customer

  C. To create demand

  D. To familiarize consumers with product uses

  E. To stress the exclusive features of a commodity

  F. To introduce styles and customs

G. To get customers to enter a store

H. To create good will

I. To get a list of prospects

J. To prepare the way for the salesman

K. To emphasize a name, a trade-mark, a slogan, or the appearance of an article

L. To accentuate the relationship of the goods of a producer

M. To present selling points

IV. Selling through advertising

A. Determining consumer demand

1. Recognition of consumer trends
2. Do-it-yourself
3. Know market research
4. Know the commodity
5. Know the history of the industry and/or the concern
6. Know the manufacturer or producer of the commodity
7. Know the nature of the commodity
8. Know the uses of the commodity
9. Know the qualities of the commodity
10. Know tests of the quality
11. Create competition with other commodities
12. Know appeals to be made
13. Know buying habits of prospects
14. Know the demand for the commodity
15. Know the sources of market information
16. Know the family income
17. Know the family budget
18. Know the city and country distribution of population
19. Know the movements of population
20. Know the purchasing power of different sections
21. Know the importance of retail stores

B. Why people buy

1. Appeals to instincts
2. Selection of the appeal
3. Variation of the appeal
4. Suggested appeals

C. The selling process

1. Steps in the selling process
2. Attention
3. Interest
4. Desire and confidence
5. Action

        6. Group selling
        7. Association

    D. Converting readers into buyers

    E. Point of sale advertising

V. What to say in advertisement

    A. Content of an advertisement

    B. Steps in preparing advertisement

    C. Size of the advertisement

VI. How to word advertisement

    A. Headlines with attention-getting power

    B. Body copy that convinces

    C. Copy with customer point of view

VII. Layout in advertising

    A. Layouts are blueprints

    B. Who does the layout

    C. Three layout forms are basic

        1. One item
        2. Group
        3. Omnibus

    D. Parts of layout

        1. Headlines
        2. Copy blocks
        3. Illustration and art work
        4. Logotype (store signature)
        5. Border
        6. White space
        7. Price
        8. Coupon

    E. What a layout should do

    F. Engraving processes

    G. Type faces

REFERENCES:

I. Books

*Richert, G. Henry, Warren G. Meyer, and Peter G. Haines, _Retailing, Principles and Practices_ (Fourth Edition, Dallas, McGraw-Hill Book Company, 1962)

*Rowse, Edward J., and Carroll A. Nolan, _Fundamentals of Advertising_ (Sixth Edition, Dallas, South-Western Publishing Company, 1957)

SUGGESTED METHODS OF EVALUATION:

I. Coordinator and students evaluate the layout
II. Written test

*Indicates best reference

MAJOR AREA: SALES AND SERVICE

UNIT: DISPLAY

OBJECTIVES:

I. To teach the fundamentals of display
II. To teach the students the opportunity in display

SUGGESTED TEACHING TIME: 6 hours

SUGGESTED TEACHING TECHNIQUES:

I. Pictures of displays
II. Film strip from J. C. Penny and Co.
III. Each student have a layout of a store window from drawings or magazine pictures
IV. Have students make a display
V. Film from the Associated Grocery

SUGGESTED ORDER OF PRESENTATION:

I. Importance of display

  A. Window display and interior display

    1. An index of the store's character
    2. Timely display
    3. Institutional display

  B. Good displays help the store to increase sales volume in five ways

    1. Displays capitalize on other forms of advertisement
    2. Displays attract new users
    3. Displays remind old users to buy
    4. Displays enable the store to meet competition almost immediately
    5. Displays help reduce inventories by increasing sales

II. Six general types of displays

  A. Open-type store front display--this is a front that is almost all glass and that has no backdrop, so that customers on the street can see the store interior

  B. Open display--merchandise is put out where the customer can examine it

  C. Closed display--high value and easily broken items are usually sold from this display

  D. Built-up displays--here merchandise is put in a decorative setting and on platforms or built up props to give added attractiveness to the articles

  E. Shadow boxes--relatively small display areas resembling a shallow box that is open on one side

F. Ledge displays--displays on ledges, on store walls, or partitions are often used for the showing of merchandise

III. There are three underlying principles of design that should be considered in constructing a display

A. Dominance--the emphasizing and directing attention to a particular item or idea. The focal point at which all the rest of the display should relate.

1. Make units of display larger, stronger, or brighter to achieve dominance
2. One kind of line, shape, color, or texture should dominate

B. Balance--the element that gives the impression that both sides of the display are equally important

1. Formal--this is the easiest to achieve. Centering on opposite sides of the center one or more identical or similar elements.

2. Informal--the placing of one element on one side and a contrasting or dissimilar element on the other side

C. Proportion--element of the right size compared to others. Golden rule of proportion: 1 to 1 5/8

IV. Factors used to create good design

A. Repetition--repeating of identical or similar shapes, lines, sizes or colors

B. Rhythm--form of repetition in which similar or identical shapes, lines, or colors are repeated at intervals

C. Harmony--combining in a pleasing arrangement of shapes, lines, or colors that are similar in one or more respects

D. Contrast--the emphasizing of difference rather than likeness

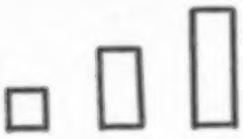
E. Gradation--refers to gradual change in units of a design

F. Interference--Placing merchandise or props in position so that one over-laps or interfers with the next

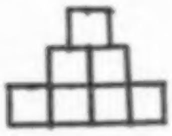
V. Arrangements used in grouping merchandise

A. Radiation--

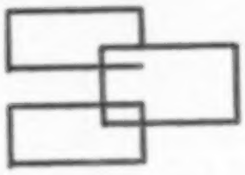
B. Stair step--



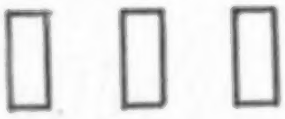
C. Pyramid--



D. Zig Zag--



E. Repetition--



REFERENCES:

I. Books

*Richert, G. Henry, Warren G. Meyer, and Peter G. Haines, *Retailing, Principles and Practices* (Fourth Edition, Dallas, McGraw-Hill Book Company, 1962).

*Robinson, O. Preston, William R. Blackler, and William B. Logan, *Store Salesmanship* (Fifth Edition, Englewood Cliffs, N. J., Prentice-Hall, Inc., 1959).

Wingate, John W., and Carroll A. Nolan, *Fundamentals of Selling*, Eighth Edition (Chicago, Southwestern Publishing Company, 1964).

Wingate, John W., and J. D. Weiner, *Retail Merchandising*, (Chicago, Southwestern Publishing Company, 1963).

Tonne, Herbert A., Sidney T. Simon, and Esby C. McGill, *Business Principles, Organization, and Management* (Second Edition, New York, Gregg Publishing Company, 1963).

*Indicates best references

MAJOR AREA: SALES AND SERVICES

UNIT: LEARNING ABOUT AGRICULTURAL PRODUCTS AND SERVICES (PRE-APPROACH)

OBJECTIVES:

I. Present factors basically responsible for a person visiting a store
II. Develop a clear understanding and a working knowledge of the first step in the selling process

SUGGESTED TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Discussions
II. Bring in various types of advertisements
III. Individual presentations of a product utilizing selling points
IV. Selected readings
V. Make promotional type charts
VI. Field trips
VII. Make selling aids

SUGGESTED ORDER OF PRESENTATION:

I. Why the consumer buys

A. Today we sell not only needs but wants. Needs are basic while wants vary with income and society changes.

Discussion of marketing and buying trends in past 100 years.

II. The first step in successful selling is to find out what the consumer wants. This is dependent on:

A. Understanding the motives why people buy.

B. Ability to tell whether customers approve or disapprove of article or service.

Discussion on individual philosophies of buying. Evaluation of credit buying in our society and materialism.

III. Consumer motivating factors

A. Desire for physical well being. Appetite, comfort, exercise, and self-preservation. Here variety has caused competition and salesmanship is paramount.

Have students bring in and assemble on a show card specific advertisements, each appealing to the motives in the lesson.

B. Recognition--this today is a strong factor in our society for all age groups. Why do you act as you do?

C. Create--area here of hobbies--this is the age of the "do-it-yourselfer."

D. Knowledge--human curiosity is the selling factor here.

E. Relaxation and amusement--TV and related items.

F. Beauty--appeal here to the cutomer's love of beauty and raising himself above the animal state.

G. Assist others--appeal to man's sympathetic nature to help his fellow man.

H. Money gain--here we find the bargain hunter. The sales person shouldn't attempt to sell on this basis.

I. Factors of lesser importance were religion and fear.

From a suggested list of articles, make a list of different buying motives for the same article and attempt to describe the people who would be influenced by each motive.

IV. Primary and selective buying motives

A. Primary motives are those causing customers to buy one class of goods rather than another.

B. Selection of a particular article within a class are termed selective motives.

V. Patronage motives

A. Assortments--variety

B. Quality--reputation

C. Fashion--be in style

D. Exclusiveness--different

E. Service

F. Friendship--this is a weak motive

G. Locale

H. Price--another weak motive

With the same suggested list of articles, apply patronage motives. Add different social classes of customers and see how many motives might be applicable.

VI. An analysis of selling points

A. Suitability--for particular purpose

B. Durability--wearing qualities

C. Versatility

D. Style and fashion--style is distinctive shape or form of product while fashon is a style that is popularly accepted.

Have each trainee give a presentation on a popular product from his training station utilizing as many of these selling points as are applicable. Then reverse the situation with a "slow-moving item."

E. Attractiveness--beauty

F. Comfort

G. Pride of ownership

H. Price

I. Safety and health--cranberry crisis

J. Care

VII. What is the essence of good selling?

A. Adequate knowledge of what the merchandise is

B. Ability to interpret that knowledge to tell what the merchandise does for the user

Make a chart showing the merchandising cycle from distributor to consumer. Fact: 1 out of 2 U.S. workers is engaged in distribution of goods.

*VIII. Food merchandising facts

A. Cereals

1. Food value
2. Forms sold
3. Wheat, corn, and rice

Compare styles of packages, weights, nutritional value and advertising campaigns of leading dry cereals vs. traditional breakfast of bacon, eggs, potatoes.

B. Sugars

1. Nutritional value--forms found in foods
2. Forms sold

C. Beverages

1. Coffee-various grinds, types, packaging
2. Teas and chocolate

D. Condiments

1. Pepper, mustard, cinnamon, nutmeg
2. Differences between spices and extracts

Read articles on sugar lobbying, May '66 READERS DIGEST. Visit a refining plant. Talk to store manager about sugar as a "come-on item."

E. Meats

1. Kinds of--beef, veal, pork, mutton, lamb, poultry, seafood, variety types.

Review factors responsible for grading. Field trip

*Note:
Much more than 5 hours can be spent on this unit, but the information from VIII through X gives an idea as to how the teacher-coordinator can encourage the acquiring of knowledge on a specific basis according to the training station. This could then become individualized study or work with small groups.

2. Grades of--factors involved. Finish, conformation, dual grading, cuts, bruises, missing parts, improper dressing, age processing, etc.
3. Sales revolution--butcher cut vs. pre-packaged. The new dry freeze process.

to packing plant--follow state or federal grader. Review study of meat carcass charts and card cuts. Field trip to store or locker plant to view cutting, packaging, weighing, pricing, and counter arrangement(s).

F. Produce

1. Garden vegetables--nutritional value
2. Root vegetables--does the potato belong here?
3. Leafy green vegetables
4. Berries
5. Citrus
6. Hard fruits--apples, pears
7. Melons and tropical fruits
8. Storage

Discussion and general review of nutritional principles learned in feeds and feeding unit. What foods would you suggest for hot weather? Do the salads (cold plates) keep you cool?

G. Dairy products

1. Milk--composition, kinds, pasteurization, storage, container types
2. Butter-packaging, manufacturing, grades, storage, packaging for carrying out
3. Cheese--manufacturing process, kinds, storage

H. Oleomargarine--kinds, manufacturing process, storage

Make a seasonal chart for promotion of a product. Demonstration on how to determine melon ripeness. Have trainees make a merchandising manual if there is a need.

I. Eggs--grades, sizing, packaging, candling, washing, storage, handling, nutritional value

J. Frozen foods--handling, methods, temperature, dinners, food types, safety

Make a wall chart giving storage instructions for fresh vegetables.

K. Bread

1. Kinds, handling, formulas
2. Other baked goods

Visits to processing plants for information on how cheese is made.

IX. Government supervision

A. Grading by federal, state, and local

B. Federal Food, Drug, and Cosmetic Act

C. U.S. Bureau of Ageicultural Economics

Bring in various types of containers and packages and discuss consumer preferences. Review any research data.

X. Non-food merchandising facts

  A. Regulations on fertilizer analysis and feed analysis

    1. State laboratory spot tests

  B. Regulations on agricultural chemicals

    1. USDA and FDA regulates this industry
    2. Insecticides and herbicides - formulas directions, safety, nature of (selective or general), packaging, storage

Cases or classic examples: DDT residues in dairy hay, penicillin in milk, chemical caponizing of poultry.

XI. Glossary of essential terms

Customer, consumer, ultimate consumer, business consumer, needs, wants, services, buying motives, condiments, conformation, marbling, finish.

REFERENCES:

Student - Bulletins and circulars from the agricultural extension service in your county. Local news media containing advertising material.

Teacher - Wingate, Gillespie, and Addison, Know Your Merchandise; Nolan and Warmke, Marketing, Sales Promotion and Advertising; wall charts from USDA showing market grades of food products. Models and specimens showing grades. Research data essential to unit. Wall chart showing merchandising cycle. Sound movies from state universities and commercial sources.

SUGGESTED METHODS OF EVALUATION:

I. Daily grade based on attitude, cooperativeness, and interest (work habits).
II. Outside assignments--bringing in advertisements, (subject readings).
III. Oral presentations--demonstrations
IV. Field trip reports
V. On-the-job evaluation. How well does he know the merchandise he is selling. Use a tape recorder (hidden) of actual transactions. Play back with student.

MAJOR AREA: SALES AND SERVICES

UNIT: THE APPROACH

OBJECTIVES:

I. To understand the different sales approaches and to develop skills in sales approach

SUGGESTED TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Visit and observe sales approaches in store
II. Use demonstrations where students pretend to be customers and salesmen
III. Students make a list of the opening sentences they have heard salespeople use. Rate them as good, fair, or poor. (Fig. 1)
IV. Use movie
V. Case study

SUGGESTED ORDER OF PRESENTATION:

I. Introduction

   A. The approach makes customers feel welcome (or not welcome)

      1. Ask the students why they like to trade in a store and put this list on the chalkboard
      2. Make a list of why they do not like to trade in a store
      3. Compare the lists and see how many times the approach is the reason

   B. The approach must be "custom-tailored"

      1. Greeting should be individualized; but guard against overfamiliarity, also against haughtiness
      2. Demonstrate how to meet different types of customers (right and wrong approaches)

II. Timing the approach (1,2,5)*

   A. Customer seems anxious to buy

   B. Customer leisurely wandering around

III. A good sales approach will cause the customer (1,2,5)*

   A. To feel welcome

   B. To feel important

   C. To have confidence in the salesperson

   D. To feel he is receiving prompt attention

*Numbers refer to suggested teaching techniques, this unit

IV. Merchandise approach (1,2,4,5)*

   A. When customer's interest is evident

   B. When the customer is a shopper

      1. Popular items
      2. Specials
      3. Unusual features or appeals

V. Factors to avoid in the approach (1,2,4,5)*

   A. Statements of personal opinion

   B. Remarks that carry any hint of forcing or soliciting

   C. Routine, impersonal, or ineffective remarks

   D. Movie: "The Tuttle Tugger" (demonstrates things to avoid)

REFERENCES:

I. Books

Retailing Principles and Practices, (Gregg,) Chapters 27-32

Facts About Merchandise, (Prentice-Hall)

Fundamentals of Selling, (Southwestern)

"Teletraining for Business Studies," American Telephone and Telegraph Company

"Course of Study in Non-farm Agricultural Occupations", U.K., Lexington, Kentucky

II. Films

"Challenge Across the Counter," OSU

"The Tuttle Tugger," John Deere Film Library, 22 North Broadway,
St. Louis, Missouri 63102

SUGGESTED METHODS OF EVALUATION:

I. Written test
II. Individual demonstrations

*Numbers refer to teaching techniques listed on the first page of this unit

Figure 1

GOOD OPENERS

A. Question - Consumer benefit approach

B. Curiosity appeal

C. Special interest appeal

D. Gift (example, Fuller brush)

E. Survey claim to get in door

F. Service

G. Reference

H. Anecdote

I. Exhibit

J. Product handed to customer without explanation

K. Compliment paid to customer

MAJOR AREA: SALES AND SERVICE

UNIT: DETERMINING THE CUSTOMER'S NEEDS: HELPING THE CUSTOMER EXAMINE THE GOODS

OBJECTIVES: To develop in the student the following:

I. The importance of being a good listener
II. The three types of customers, how to react
III. Precautions in substitute selling
IV. Avoiding problems with undecided customers
V. The importance of what to say and how to say it
VI. Various customer characteristics and what to do
VII. Importance of assisting customers properly
VIII. Guidelines for finding your customer's needs and desires
IX. The five buying decisions of a customer

SUGGESTED TEACHING TIME: 6 hours

SUGGESTED TEACHING TECHNIQUES:

I. The use of the tape recorder prepared in advance showing the importance of being a good listener
II. Each student will complete one outside reading form for each reference listed (books and booklets)
III. Show visual aids, such as the one listed:
    Salesmanship Series
    16 mm film, B & W, 1959
    McGraw-Hill Book Company, Inc.
IV. Role playing on substituting items
V. The use of an outside speaker--one with whom you enjoy doing business. Suggested topic: Good customer-salesman relations.
VI. Home-made charts, small pictures for opaque projector or overlays, showing three types of customers
VII. Actual product samples are wonderful teaching devices if they can be acquired

SUGGESTED ORDER OF PRESENTATION

I. The importance of being a good listener

After contact has been made with the customer, it is important that the salesman be a good listener. Before the sales talk begins, let the customer tell you what he is interested in. (See "Seven Ways to Improve Your Listening Ability," from How to Sell Well.)

II. How to react to the three types of customers

Students will have to do some research on this topic. The three types of customer are:

A. Those who know what they desire

B. Those who have a general idea of what they desire

C. Those who are unaware of their needs and desires

(Show figures on opaque projector)

III. Precautions to follow when substitute selling

A. The product suggested as a substitute will serve as well or better than the one desired. (Example: A person desires to purchase a one-gallon container of milk. The substitute item may be suggested. Two half-gallons will serve the purpose of the gallon and be more convenient to handle, even if there is a little difference in the price.)

B. The product may not be of the same quality as desired by the customer, but the other product must not be belittled or talked down. (Example: Ice cream as compared to ice milk).
(A chart prepared to show ridiculous situations may be used as an excellent teaching device, such as:

#1. Make chart showing substituting ice milk for milk, or make chart showing substituting coffee cream for buttermilk

#2. Show this sign on opaque projector: "We know our competitor sells for less, but he knows what his product is worth.")

IV. Problems with undecided customers

When a customer comes into your business, and is unaware of what he really wants, but has a general idea--try to avoid being too specific in your questions. Being specific may cause these situations to occur:

A. The customer may be forced to make decisions he may not have thought of, rash judgments.

B. Specific answers from the customer may restrict the variety of merchandise you offer for sale.

C. Direct questions will increase the danger of your being out of stock in certain items.

D. Being specific may give the customer the impression that you do not care to take the time to show him the broad selection of your goods in stock.

V. The importance of knowing what to say and how to say it, being tactful.

The importance of knowing what to say, how to say it and when to say it may be an asset to you as a salesman. Someone browsing around a certain section of the store while someone else shops is a potential customer. By observing him and conversing with him at his level, you may impress him with the idea that he really could use the item he is looking at. People like to think that everyone is equal, and a salesman should make the customer feel this way.

VI. Various customer characteristics and what they mean.

A. Their walk. If a person comes into the store with hurried steps, you know just how much time to spend with them.

B. Clothes. This may be a tircky characteristic, some people really dress up when they go shopping.

C. Conversation. Give the customer a chance to speak, be a good listener, let the customer tell you what is wanted.

D. Customer's actions. Note carefully the customer's reactions when showing him certain items.

E. Age and size. People of different ages and sizes want items of various qualities and all tend to regard merchandise differently.

VII. The importance of assisting customers properly

In assisting customers to find what they want, it is neccessary to show them the right merchandise in the right amount. This will usually:

A. Win confidence of the customer

B. Assist you to complete more sales

C. Indicate to the customer that you know what is in stock

D. Allow you to show them more merchandise, showing you are familiar with the stock.

VIII. Guidelines for finding your customer's needs and desires

In determining your customer's needs and desires, it is important to show items in certain order. There are 5 guidelines; namely:

A. When he asks, show him the nearest to what he asks for, in style, color, size, and price.

B. If he is not positive as to what he wants--show him what you may have as near to what he expresses his desire for. Good conversation is an asset here.

C. Show him the medium price first if he has not given any indication as to price.

D. If he shows no preference, show advertised items first or those having unusual value.

IX. Throughout the time you are assisting the customer to find his needs and desires and when he is examining the goods, the salesman must keep the five buying decisions of a customer in mind. They are: (Marketing-Sales Promotion and Advertising).

A. Need

B. Thing

C. Source

D. Price

E. Time

REFERENCES:

I. Books

*Richert, Meyer, and Haines, Retailing, Principles and Practices, Fourth Edition, (Gregg Division, McGraw-Hill Book Company, New York)

*Haas and Perry, Sales Horizons, Second Edition, (Englewood Cliffs, N.J., Prentice-Hall, 1963)

Nolen and Warme, Marketing, Sales Promotion and Advertising, (Cincinnati, Southwestern Publishing Co., 1965)

How to Sell Well, (McGraw-Hill Book Company, New York)

II. Films

"Salesmanship Series," 16 mm film, B & W, 1959, McGraw-Hill Book Company, Inc., New York

SUGGESTED METHODS OF EVALUATION:

I. Written test on data from lesson and from experiences by students in class

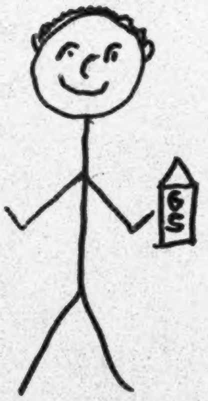
II. Role playing by students in class to show what they have learned from the lesson

*Indicates best references

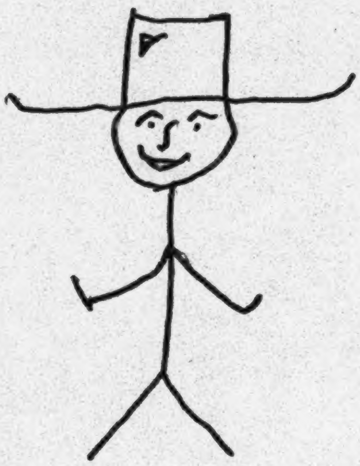
Figure 1

THREE TYPES OF CUSTOMERS

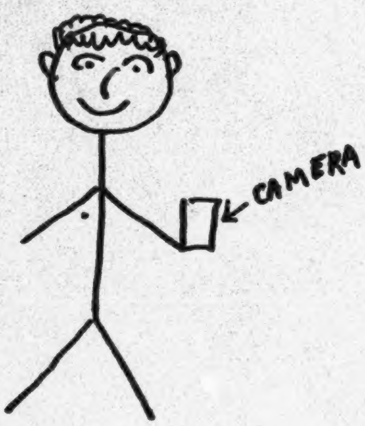
1. Those who know what they desire.

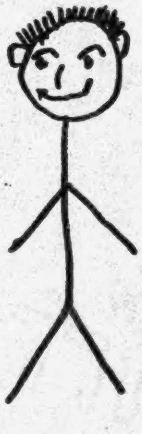

I KNOW WHAT I LIKE, AND I LIKE GOLD SPOT PRODUCTS.
GS

2. Those who have a general idea of what they desire.


SHOW ME A BRAND OF MILK PRODUCTS THAT REALLY SATISFY TASTE, AND I'LL EAT MY HAT.

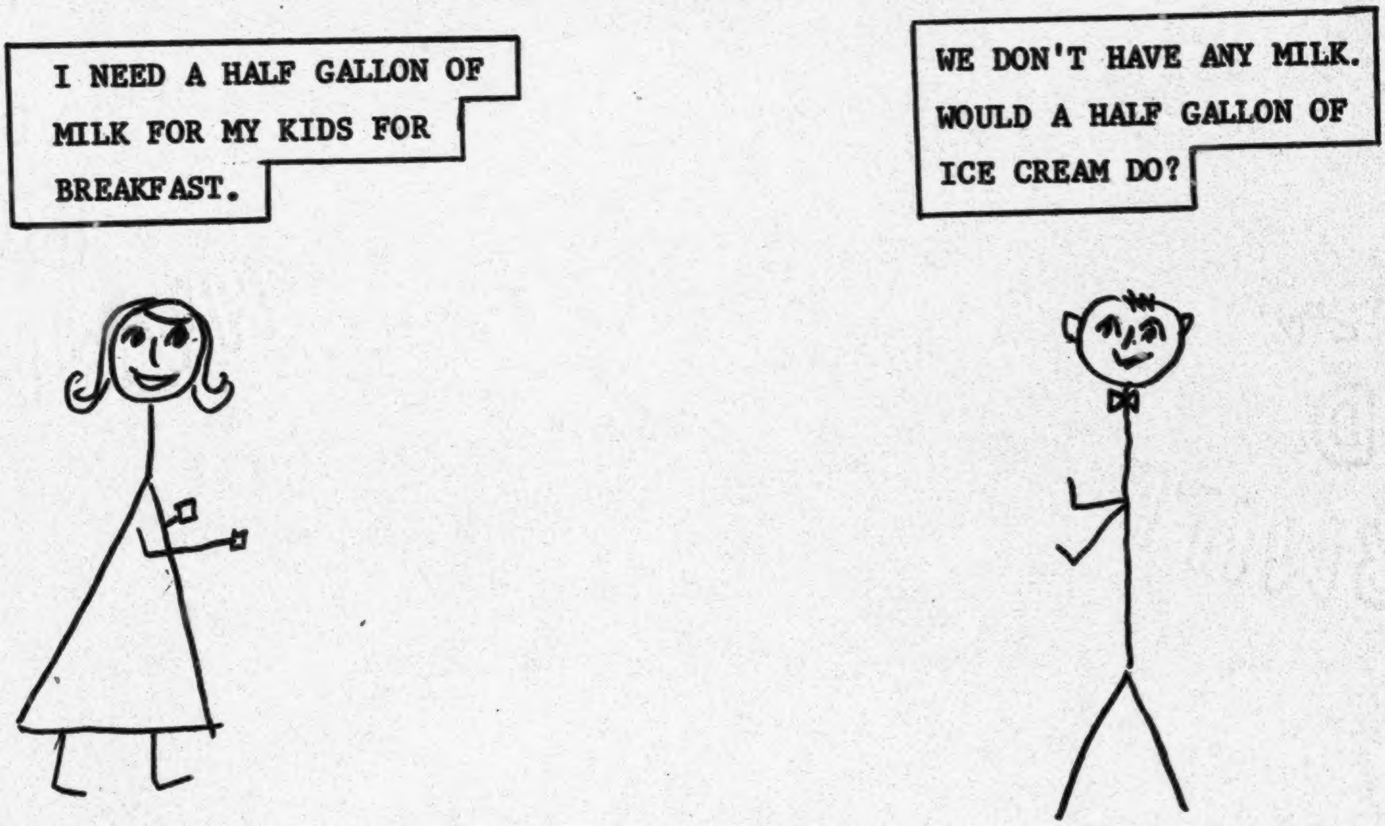
3. Those unaware of their needs and desires.


THAT'S HOW I GOT MY CAMERA. SAVING COUPONS FROM GOLD SPOT PRODUCTS.
CAMERA

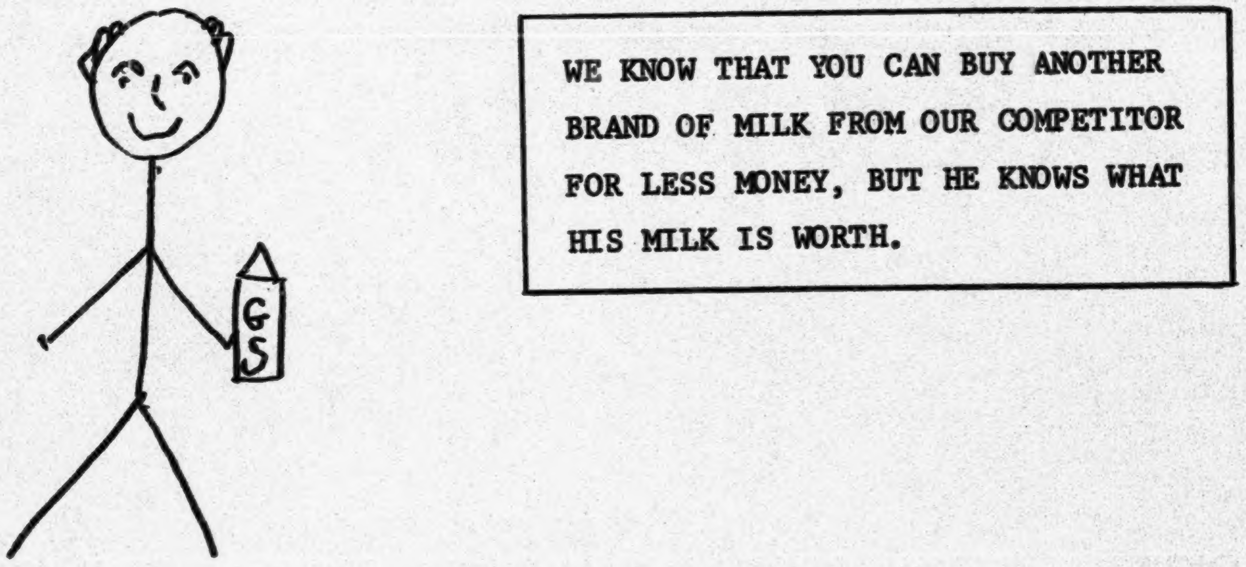

SAVING COUPONS, EH? I THINK I'LL TRY THAT BRAND.

OBSERVE THESE PRECAUTIONS WHEN SUBSTITUTING ITEMS

1. Must serve as well or better than the one desired.


I NEED A HALF GALLON OF MILK FOR MY KIDS FOR BREAKFAST.
WE DON'T HAVE ANY MILK. WOULD A HALF GALLON OF ICE CREAM DO?

2. Do not belittle or talk down an item that your company does not handle.


GS
WE KNOW THAT YOU CAN BUY ANOTHER BRAND OF MILK FROM OUR COMPETITOR FOR LESS MONEY, BUT HE KNOWS WHAT HIS MILK IS WORTH.

MAJOR AREA: SALES AND SERVICE

UNIT: ANSWERING QUESTIONS AND OBJECTIONS

OBJECTIVES:

I. To acquaint the student with the various objections and excuses
II. To develop the ability of the student to overcome excuses and various objections

SUGGESTED TEACHING TIME: 5-6 hours

SUGGESTED TEACHING TECHNIQUES:

I. Read assigned textbook material
II. Role playing
III. Use of tape recorder
IV. Observe selling techniques in local stores
V. Original charts

SUGGESTED ORDER OF PRESENTATION:

I. Introduction:

Begin the unit by having each individual attempt to sell the teacher a product and the teacher refusing to buy it. Then ask the student how he would handle the situation in an actual selling attempt.

II. What are the kinds of sales resistance?

A. Sincere objections

B. Excuses

C. Silent resistance

III. Dealing with sincere objections

A. Turning the objections into selling points

B. Agreeing with the customer and presenting another angle

C. Requesting the customer to explain the objection

D. Admitting the objection and giving a superior point

E. Asking a question that when answered overcomes the objection

F. The direct denial method

IV. Dealing with excuses

A. Overcoming excuses:

1. Acknowledge it, agree with the customer when possible and then shift quickly back into the sales talk .

2. The sales person should never lose patience

V. Dealing with silent resistance

   A. The repetition method

   B. The probing method

VI. Ways of controlling sales resistance

   A. Prevent it

   B. Anticipate it

   C. Meet it when it is revealed

VII. Skill in meeting sales resistance

   A. Your judgment as to when to apply skill

   B. Your attitude toward your customer

   C. Your skill in performing the procedure

REFERENCES:

I. Books

Richert, Meyers, Haines, Retailing Principles and Practices, pp. 232-238

Robinson, Blackier, and Logan, Store Salesmanship, pp. 66-87

Haas and Perry, Sales Horizons, pp. 194-202

SUGGESTED METHODS OF EVALUATION:

I. Have students display selling techniques in class; record and play back each individual's attempt at selling a product in class.

MAJOR AREA: SALES AND SERVICES

UNIT: CLOSING THE SALE

OBJECTIVES:

I. To understand the elements and their use in closing a sale and to develop skills in closing a sale

SUGGESTED TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Role playing (right and wrong way)
II. Observation and field trip
III. Use of movie
IV. Case study

SUGGESTED ORDER OF PRESENTATION:

I. Introduction

  A. The final point is closing the sale

    1. The most difficult step in the sale
    2. The salesman must lead up to the discussion

  B. The salesman's actions

    1. He must show dignity and earnestness
    2. He must never show that he is unsure, nervous, excited and must never beg for an order

II. Help the customer to concentrate (1,2,4)*

  A. Seek agreement on obvious points

  B. Make these small agreements progressively more forceful leading to the major discussion

III. Hold off giving the price (1,2,4)*

  A. Stress quality of the product

  B. Stress services related to the product

IV. Activities of salesman when the final decision time draws near (1,2,4)*

  A. Psychological moment

  B. Services of the store (credit, etc.)

  C. Suggest related products to buy

*Numbers refer to techniques listed above

V. After decision to buy is made (1,2,3,4)*

  A. Record the sale (store policy)

  B. Wrapping or package

  C. Thank the customer

REFERENCES:

I. Books

Wingate and Nolan, Fundamentals of Selling, Southwestern, Chapter 18

Store Salesmanship, Prentice-Hall

Retailing Principles and Practices, Gregg, Section 3

Sales Horizons, Prentice-Hall

II. Films

"Closing the Sale," OSU

SUGGESTED METHODS OF EVALUATION:

I. Written test
II. Individual demonstrations

*Numbers refer to teaching techniques listed

DO'S AND DON'TS - CLOSING A SALE

1. Do display a friendly manner at the close, even though there is disagreement between the prospect and the salesman. This helps to aviod arguments.
2. Do be sure to have all materials and equipment that will be needed. Misplaced order blanks, obsolete price lists, and dry fountain pens can lose sales.
3. Do realize that begging for a sale makes the salesman and his offer look bad: It also disgusts the prospect.
4. Do ask the prospect to "OK" or approve the order rather than sign it.
5. Do make buying as easy and painless as possible.
6. Do try for privacy at the close. Phone calls and third parties distract.
7. Do study each prospect as a baseball pitcher studies each batter. Then pitch to his weakness.
8. Do lead the prospect to think of himself as the owner of the product from the beginning of interview.
9. Don't let the prospect know how much the sale means.

NEED
Time
Price
Thing
Source

CLOSING THE SALE

10. Don't be apologetic, particularly in quoting price.

11. Don't make written or even oral promises unless authroized to do so; otherwise, there will be friction and expense.

12. Don't make a ceremony out of closing, lest the prospect becomes frightened.

13. Don't give the prospect an excuse or an opportunity to back away from the purchase.

14. Don't ever ask the prospect for the buying decision in such a way that he can answer with a "Yes" or a "No," for the latter closes the door.

15. Don't make it difficult for the prospect to complete his purchase quickly if he cares to do so.

16. Don't let the prospect miss seeing that the salesman expects the prospect to buy.

17. Don't make it easier for the prospect to refuse than to buy.

RECORDS AND CONTROL

The curriculum designed to meet the areas of knowledge needed by students in a wide variety of occupational experiences in distribution were divided according to major areas of retail businesses. Therefore, the Records and Control Area includes everything involving store records from the time the sale is recorded through the accounting forms necessary for understanding of business conditions. The committee members from the 1966 Agricultural Occupations Institute who compiled this major area of the curriculum are:

W. D. Sumner, Chairman
James Hunter
Delbert Holman
Elroy Otte
Finus Branham

All units of this major area were planned to be taught to the second-year cooperative students, since these units deal with business management and understanding. The first of these units, Arithmetic for the Salesman, must of necessity be taught to the beginning coop student as soon as possible. The major area of Records and Control has been broken down as follows:

Arithmetic for the Salesman

Taxes

Regulations of Business

Accounting and Control

It was determined by the members of this committee that the unit on arithmetic would require 20 hours of class time during the first-year course of study; the remainder of the major area on Records and Control would require 25 hours of second-year class time.

MAJOR AREA: RECORDS AND CONTROL

UNIT: ARITHMETIC FOR THE SALESMAN

OBJECTIVES: The student should learn:

I. To calculate what the customer must pay
II. To calculate his own earnings
III. To determine sales productivity
IV. To make comparisons
V. To price goods and services
VI. To calculate net income
VII. To determine amounts that the customer must pay
VIII. To use the vocabulary of sales arithmetic.

SUGGESTED TEACHING TIME: 20 hours

SUGGESTED TEACHING TECHNIQUES:

I. Class discussions
II. Homework assignments
III. Demonstrate the solving of problems by use of the overhead projector
IV. Tests

SUGGESTED ORDER OF PRESENTATION:

I. What is salesman's arithmetic?

  A. Tools used to answer problems mathematically
  B. Small part of agricultural mathematics

II. Can you work simple arithmetic? Demonstrate!

  A. $1 + 4 \times 2 \div 2 - 4 \times 2 + 3 = ?$

III. Why did some of you miss this problem?

  A. Error in addition
  B. Error in subtraction
  C. Error in multiplication
  D. Error in division
  E. Did not use correct procedure

IV. Under what conditions would you be expected to work arithmetic problems as a salesman?

  A. When figuring discounts

    1. Employee discounts -- given employees when purchasing merchandise
    2. Trade discounts -- the wholesaler's suggested retail price less a certain percentage

3. Quantity discounts -- given for purchasing large amounts at one time
4. Cash discounts -- for paying cash upon delivery or by a certain date

B. When figuring sales tax
C. When using percentages
D. When calculating earnings
E. When making comparisons

1. Per cent of profit
2. Per cent of sales
3. Stockturn
4. Average sale

F. When pricing goods and services

1. Markup
2. Estimating prices

G. When figuring commissions
H. When making change
I. When figuring bills of material
J. When figuring planting rates
K. When finding area and volume

V. Vocabulary words in sales arithmetic. (Assignment)

A. Discount
B. Complement
C. Aliquot part
D. Commission
E. Drawing account
F. Stockturn
G. Average sale
H. Markup
I. Square (in roofing).
J. Seeding rate

VI. Examples of arithmetic problems for salesmen:

A. Discount problems:

You as an employee may be given a 10% discount when purchasing a $75.00 lawnmower. How much would you pay? (Also work using complement). Ans. $67.50

B. Sales tax:

A customer makes a $3.78 purchase of taxable item. How much do you collect for sales tax purposes if tax rate is 2%? Ans. 8¢

C. Calculation of earnings: (Commissions)

For a certain period, you had a gross sales of $50,000.00 with a return of goods amounting to $1,200.00. You received a commission of 5% of the net sales. How much commission did you earn? Ans. $2,440.00

If you had received $1,000.00 on a drawing account, how much would be due you? Ans. $1,440.00

D. Pricing goods:

You paid $4.00 for a sprayer and figure that the store should sell it for $6.00. What markup percentage would this be? Ans. 33-1/3%

You paid $5.00 for a bag of pig starter and you figure that you need to make a 20% profit. How much would you sell it for? Ans. $6.25

E. Comparisons:

1. Percentage of sales:

What is the percentage of sales that a store makes if it had a gross sales of $50,000.00 with an expense of $15,000.00? Ans. 30%

2. Stockturn:

A feed dealer knows that he must not keep feed in stock over two months or it will get old. This means that he must turn his stock six times a year. If he maintains an average stock of 2,000 pounds of horse feed on hand, yet he sells 24,000 pounds during the year, what was his stockturn? Ans. 12 stockturns

3. Average Sale:

A salesman finds that he has sold $28,000.00 worth of products on 2,600 invoices. What was his average sale? Ans. $10.77

F. Making change:

A customer gave you a twenty dollar bill to pay for a $1.02 invoice. What money would he get back? Ans. 3 pennies, 2 dimes, 1 quarter, 1 half, 3 ones, 1 five, and 1 ten.

G. Bills of material:

1. Lumber:

   You sold 28 boards that were 2" thick, 6" wide, and 16' long. How many board feet did you sell? Ans. 448 bd. ft.

   You have a 3/4" sheet of 4' x 8' plywood, how much plywood would you sell? Ans. 32 sq. ft.

   You have 10 pieces of 3" molding that is 12 feet long each. What quantity would you sell? Ans. 120 run. feet.

2. Cement:

   A customer wants to lay a sidewalk 4" thick, 3' wide and 50' long. How many bags of cement will he need for a 1:2½:3 mix? Ans. 11 bags

3. Roofing:

   A customer has a shed-type building that is 20' wide and 50' long. What lengths of iron would you recommend? Ans. 10' and 11'

   How many squares of corrugated roofing would it take? Ans. 10½ sqs.

4. Painting:

   How many gallons of a sealer paint will be needed to paint the inside of a silo that is 20' diameter and 40' high if a gallon of paint will cover 200 square feet? Ans. 13 gallons

H. Seeding rate:

   If a customer asked you to send him enough milo seed out to plant 100 acres at the rate of 8 pounds per acre, how many bushels of planting seed would you send him? Ans. 15 bushels

EVALUATION: Test as needed

REFERENCES:

Fenske, Arithmetic in Agriculture.

*Wingate and Nolan, Fundamentals of Selling.

Aberle, Sielaff and Mayer, General Business for Today and Tomorrow.

*Wingate and Weiner, Retail Merchandising.

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*Indicates best references
Diagnostic Test, pp. 27-29, last summer's institute report and the problems given in the Paducah Kentucky Manual (pp. 125-135).

MAJOR AREA: RECORDS AND CONTROLS

UNIT: TAXES

OBJECTIVES:

I. To develop an understanding of the functions of taxes
II. To develop an understanding of the essential characteristics of the major kinds of taxes
III. To develop an understanding of the relation between taxes and governmental finance. (Local, State and Federal)

SUGGESTED TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Ask leading questions as to what are taxes and who is obligated to pay them.
II. Use overlay charts and pictures to illustrate what tax money is used for and why it is needed.
III. Hand out bulletins and pamphlets describing federal taxes and their benefits.
IV. Use a local business owner to explain to the class how taxes affect his business.
V. Assign outside readings in reference books.
VI. Give the students practice experience by using the free governmental packets.

SUGGESTED ORDER OF PRESENTATION:

I. What is a tax?

A. It is a compulsory contribution of money to be made to a government to provide for services for the common good.

II. In what ways do individual citizens benefit from taxes?

A. Taxes are paid to pay costs of government; some to regulate certain aspects of business. Many common services are provided by local, state, and federal governments. (Discuss local home situations. Students may contribute greatly.)

III. Some uses of taxes are:

A. Building roads and bridges.
B. Maintaining public schools and libraries.
C. Catching and punishing criminals
D. Maintaining armed forces
E. Others (see Figure 1)

IV. How is a tax distinguished from a payment to a government agency?

A. Taxes are compulsory payments to the government to provide services for the benefit of all; whereas a payment to a government agency is one where that person or business needed to use the services of that government.

Example:
1. A postage stamp pays for a service.
2. Fines for violating the law are penalties, not taxes.
3. Assessment on certain property for streets or sewer constructions are not taxes.

V. Who ultimately bears the burden of paying for public service?

A. The individuals and the businesses who pay taxes bear the burden of paying for public services, and this is one of the main uses of tax money.

VI. What is a tax system?

A. A tax system is the plan by which a unit of government raises funds to pay for the cost of government.

VII. What are the essentials of a good tax system?

A. The essentials of a good tax system are:

1. One that must produce sufficient income to pay the cost of the government.
2. Relatively simple to understand and easy to administer.
3. Tax each individual should pay must be determined by a formula or basic rule, not arbitrarily.
4. Tax must be just -- based upon a plan that is considered to be fair to all taxpayers.
5. It should make tax evasion difficult, if not impossible.

VIII. What are the various taxes to which a business enterprise is subject to pay?

A. Business enterprises are subjected to the following taxes:

1. Property or real estate tax -- levied upon real estate or any personal property that has value and that can be bought or sold.
2. Individual income tax -- levied upon the income of any person earning $600 or more in any one year.
3. Corporation income tax -- levied upon the income of a corporation.
4. Sales tax or commodity tax -- levied upon all income from sales both of commodities and services.
5. Business or service tax -- based upon the idea that a business should pay for the privilege of existing and operating.
6. Inheritance tax or share tax -- the tax is taken out of the part of the estate remaining after specific bequests have been distributed.

7. Gift tax -- levied upon a gift from one person to another. A tax to prevent avoidance of estate and inheritance taxes.
8. Estate tax -- calculated on the entire amount of the net estate, regardless of the interests of the beneficiaries.
9. Social Security tax -- levied upon the payroll businesses and individuals.
10. Special tax -- levied by the federal government, state governments, and local governments. Many of these, such as the tax on legal papers (deeds, notes, and mortgages), are stamp taxes; that is, they are collected through the use of revenue stamps. Some are customs taxes on imports; others, excise taxes in the form of automobile, dog, and hunting and fishing licenses; and still others, special licenses for conducting certain types of businesses.

IX. What are the four classifications of taxes?

A. Classification of taxes are made several ways. The first way is according to who has to pay the taxes, directly or indirectly.

1. According to who has to pay the taxes . . .

Direct tax -- one that is levied directly on those who pay it. This tax may or may not be passed on to others.

Indirect tax -- one that is levied upon a group of individuals or organizations but which is passed on indirectly to others.

Examples:

a. Real estate tax -- direct when paid by the owner of the property. Indirect when passed on to the renter by charging higher rent.
b. State sales tax -- direct when added to each sale according to a certain per cent of total sales. Indirect when total sales of a merchant passes on to the consumer through higher prices.
c. Excise tax -- one thatis levied upon the commodities, facilities, privileges, or occupations within the country. Direct -- cigarette tax to be imposed directly upon the merchant. Indirect -- if cigarette tax is included in the selling price.
d. Gasoline tax -- Direct if federal and state taxes are added to the price of the gasoline. Indirect -- taxes that are supposed to be on the producer or distributors but are passed on to the consumer in higher prices.

2. Classifying taxes is according to the use of the tax.

a. Revenue tax -- one designed solely to obtain money for the government to use in financing its operations.

Example: (1) Real property
(2) Personal property

b. Administrative tax -- one in which the government has some purpose other than the collection of money.

Example: Excise tax -- it does bring in some revenue but is it intended for administration purposes by discouraging the consumption of the commodities or the service.

c. Progressive tax -- one which is graduated so that it rises in percentage as the amount on which it is based increases.

Example: Federal tax on individual income . . . $4,000 is taxed 22% whereas $300,000 is taxed 91%.

d. Proportional tax -- one which is based on a flat figure.

Example: Federal gasoline tax of 9 cents per gallon of gasoline.

e. Regressive tax -- one that becomes lower as the tax base increases.

Example: Corporation charter tax decreases in proportion as the numbers of shares increases.

3. Classifying taxes is based on practical distinction. These distinctions are threefold.

   a. To what or which agency the tax is paid.
   b. How the business firm obtains the tax money.
   c. Upon what the tax is imposed.

4. Classifying taxes distinguishes them according to what they are levied on.

   These taxes can be discussed under four major categories:

   a. Taxes imposed for merely being in business.
   b. Taxes on business transactions.
   c. Taxes for employing workers.
   d. Taxes for earning profit.

X. What is meant by "shifting the tax burden"?

A. Whenever the cost of a product is increased to include a tax, the tax is being passed or burden is shifted on to the buyer.

XI. What is meant by the term "hidden taxes"?

A. Many of the indirect taxes are referred to as hidden taxes because the consumers are not aware of the fact that they are paying those taxes.

XII. Income tax -- (Use Internal Revenue Packets) (See Figure 2)

A. Forms used:

a. W-4
b. W-2
c. 1040A
d. 1040

B. Income to report:

a. Wages
b. Sales
c. Trades and exchanges
d. Rent income

C. Expenses:

a. Repair and maintenances
b. Cash expenses
c. Rent paid
d. Depreciation

(1) Method of computing
(2) Additional first year depreciation

e. Expenses partly personal and partly business.

D. Net operating loss deductions
E. Non-deductible expenditures

a. Capital expenditures
b. Other non-deductible items

F. Capital gains and losses
G. Casualty loses and thefts
H. State income tax -- if any
I. Managing income to minimize taxes.

XIII. Social Security:

A. Show film Before the Day (13½ min, B&W).
B. Show film Sam'l and Social Security (7 min. C.).
C. Hand out booklet Your Social Security (OASI-35).

1. How Social Security operates:

a. State and local programs

    (1) Child Welfare
    (2) Public assistance
    (3) Employment security

b. Federal Social Insurance Programs
c. From account number to benefits
d. History of Social Security

2. How you earn Social Security protection:

    a. Show film The Social Security Story (14 min. C).
    b. Hand out booklet Social Security Benefits . . . How to Estimate the Amount . . . How You Earn Them . . . How Much Credit You Need (OASI-855).
    c. Hand out booklet Three Who Came Back (OASI-38b).

        (1) Percentage of wages
        (2) Quarters needed

3. Social Security Benefits -- use booklet Your Social Security.

    a. Old-age Retirement Insurance Payment . . .

        (1) Amount of benefits
        (2) Dependent's benefits
        (3) Increasing your benefits.

    b. Disability Insurance benefits . . .

        (1) How disabled must you be?
        (2) Amount of benefit?
        (3) How long must you work?

    c. Survivor's Insurance benefits . . .

        (1) Who is eligible?
        (2) Amount of benefits?
        (3) Proof needed?

    d. If you work after you start getting benefits.

        (1) Earning up to $1200
        (2) Earning between $1200 and $1700
        (3) More than $1700
        (4) After age 72

    e. Events that stop benefits

REFERENCES:

I. Books

Robinson, Haas, How to Establish and Operate a Retail Store, (Prentice-Hall Publ. Co., 1942).
*Wilson, Eyster, Consumer Economic Problems, (South-Western Pub. Co., Sixth Ed., 1961).

II. Bulletins

A. Internal Revenue Service
B. State Statutes
C. City Codes
D. Social Security Administration

1. Your Social Security (OASI-35). A booklet that explains generally the basic idea of social security, how benefits are earned, what payments can be made, and how the social security system is financed.

2. Social Security Benefits . . . How to Estimate the Amount . . . How You Earn Them . . . How Much Credit You Need (OASI-855). A booklet that gives examples of monthly payments with a four-step formula for computing benefits and an explanation of how much time is needed to qualify for benefits.

3. Social Security . . . Taking Care of Tomorrow's Problems Today (AR-7004). Request for statement of earnings card which can be used to check the Social Security Administration's record of an individual's earnings.

4. Three Who Came Back (OASI-38b). An illustrated cartoon book. Three stories dramatize how Social Security is vitally important in the lives of young people who are just beginning their careers.

5. If You Work While You Get Social Security Payments (OASI-23). A booklet that explains restrictions on earnings of people getting Social Security benefits. Tells how much you can earn while receiving all or part of your Social Security payments and what events will stop your benefits.

III. Teaching Charts

A. This series of three charts is available to teachers in two sizes, for wall and desks.

1. How Social Security Works (OASI-81). A description of the Federal and State Government roles in the Social Security system. Shows differences between the old-age, survivors, and disability insurance, and child welfare, public assistance, and employment security.

2. From Account Number to Benefits (OASI-82). Shows the process by which a worker sets up his earnings account and has his earnings credited and receives benefits based on his account.

3. History of the Social Security Law (OASI-83). Highlights the development and growth of the Social Security law from 1935 to the present.

IV. Film Strips

A. Taxes -- Your City's Income (Cur. AF-1951). 34 fr. silent with captions B&W, $3.50, with script. Produced by Audio-Visual Materials Consultation Bureau. Wayne University.

Shows the great expense involved in running a city, how a typical city budget is prepared, and where the money comes from to finance the budget.

B. Why We Pay Taxes (LC card Fi 53-1107). 43 fr. silent Color, $6.00: McGraw-Hill, 1953. Produced by Popular Science Publishing Company.

Two elementary school children learn about various kinds of taxes including income tax, luxury tax, and property tax. Explains that taxes are necessary to support the cost of conducting federal and state government programs. Describes local services dependent upon tax money.

V. Motion Pictures

A. The Social Security Story (14-Min. C. 16mm). A young newspaper reporter while doing a story about Social Security headquarters learns along with her grandfather the basic idea of old-age survivors, and disability insurance. The film tells how earnings records are kept and what happens when a claim for payment is made.

B. Sam'l and Social Security (7-Min. C. 16mm). This animated film explains simply how the Social Security program operates. It shows what benefits are available and what impact these benefits have on the community.

C. Before the Day (13½-Min. B&W 16mm). This film is an account of the background of the several programs that make up Social Security. It is the story of what happened before the day Social Security started and the story of what happens before the day the first Social Security check arrives.

SUGGESTED METHODS OF EVALUATION:

I. Correctness in practice work using government packets.
II. Various written tests: true and false, essay, multiple choice, fill-in-blanks, and matching.
III. Oral discussions and quizzes.
IV. Problem-solving situations.

Figure 1

TAXES COLLECTED BY LOCAL, STATE, AND FEDERAL GOVERNMENTS -- 1964

(IN MILLIONS OF DOLLARS)

Kind of Tax	Taxes collected by			
	Local	State	Federal	Total
Property	$20,519	722		$21,241
Individual Income	376	3,415	$48,697	52,488
Corporation Income (profits)		1,695	23,493	25,188
Sales and Gross Receipts	1,806	13,957	14,776	30,538
Other taxes, including motor vehicle, licenses, estate, inheritance and gift taxes, and permits	741	4,454	3,542	8,837
Total	$23,442	$24,243	$90,508	$138,292
Per capita total tax* (in dollars)	225.63	200.09	632.19	1005.63
*Rounded				

Source: Government Finances in 1964, Department of Commerce, Bureau of the Census

Total tax rate on property, comprised of the sum of the separate rates levied by different units.

Taxing unit	Tax rate percentage on assessed value
State	1.5
City	1.7
County	.9
School district	2.8
Total tax rate	6.9

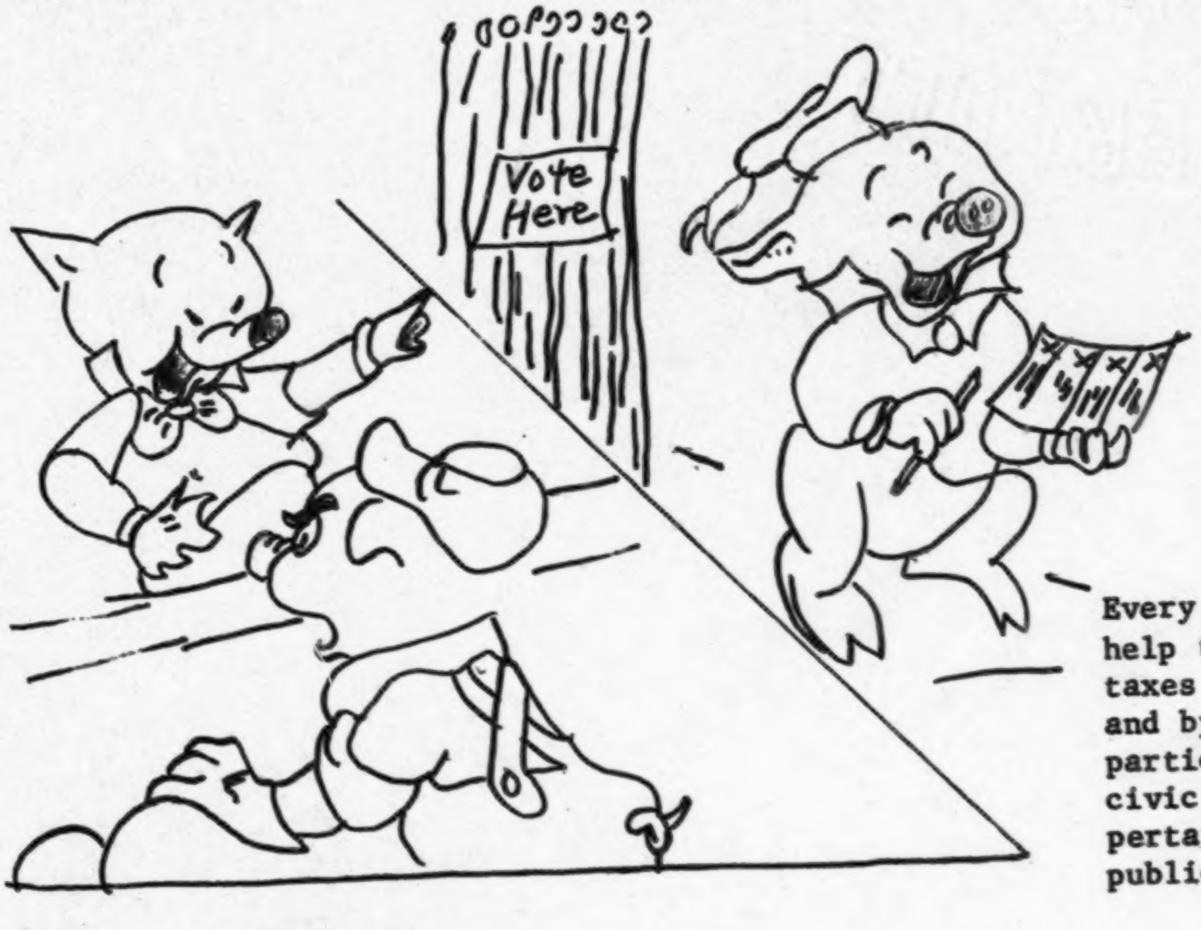
Figure 1

News Flash

WASHINGTON -- If you are among the majority of Americans making less than $15,000 a year, taxation gobbles up one of every four dollars you earn.

This was reported by the Tax Foundation, Inc., a non-profit private research organization in New York. It said the 25 per cent tax bit applies to four out of five American families.

The federal income tax still ranked as the major tax on all incomes above $4,000, and the federal government continued to take the major share of the total intake.



Every person may help to control taxes by voting and by actively participating in civic activities pertaining to public services.

MAJOR AREA: RECORDS AND CONTROLS

UNIT: REGULATIONS OF BUSINESS

OBJECTIVES:

I. To give the students a basic understanding and appreciation of regulations and controls.
II. To acquaint students with the common types of regulations
III. To show students how these regulations are administered.
IV. To inform students about some of the common regulatory laws.

SUGGESTED TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Motivate - Illustrate with opaque projector why controls are needed.
Role Play - To illustrate how it would be without regulations.
II. Supervised Study - Follow study questions with reading assignment.
III. Lecture-Discussion of what has been read.
IV. Individual oral reports.
V. Study Questions:

  A. Why were regulations devised?
  B. What are the common types of regulatory agencies?
  C. What are the common areas of regulation and how are these regulations administered?
  D. What are some of the common regulatory laws?

SUGGESTED ORDER OF PRESENTATION:

I. Reasons for regulations

  A. Need to protect citizens against hazards that arise from buildings and equipment.
  B. Need to protect interests of employees.
  C. Need to protect customers and competitors against unfair prices and practices.
  D. Need to protect consumers against sale of harmful goods or misrepresentation in advertising and selling.
  E. Need to tax business in order to help pay increased government expense.

II. Common types of regulatory agencies

  A. Self-regulative

    1. Better Business Bureaus
    2. Newspapers, television, radio, and magazines
    3. Trade associations

  B. Government Regulations (enforced by gov't. agencies)

    1. Food and Drug Administration

2. Federal Communication Commission
3. U.S. Department of Agriculture
4. Federal Trade Commission
5. Department of Health, Education, and Welfare
6. Bureau of Standards
7. U.S. Patent Office
8. Securities and Exchange Commission
9. State Laws
10. Local or Municipal Laws

III. General Areas of Government Regulations

A. Safety regulations to prevent the hazards of fire and collapse that would injure people.
B. Labor regulations to protect welfare of employees.
C. Price regulations to assure fair prices.
D. Regulations of retail credit and merchandising.
E. Regulations of advertising, selling, and taxation.

IV. Common Regulatory Laws

A. Social Security
B. Federal Wage-hour Laws
C. Fair-trade Laws
D. Unfair Practice Laws
E. Anti-Discrimination Laws
F. Pure Food, Drug, and Cosmetic Laws
G. Others

REFERENCES:

I. Books

Shilt, Wilson, Business Principles and Management (Southwestern, 1964).

*Wingate, Weiner, Retail Merchandising (Southwestern, 1963).

Department of Agricultural Extension, University of Wisconsin, Nov. 1963 Farm Advertising and Salesmanship.

Information brochures from self-regulative agencies and governmental self-regulative agencies.

EVALUATION: Testing, evaluating reports, class participation.

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*Indicates best reference

MAJOR AREA: RECORDS AND CONTROL

UNIT: ACCOUNTING AND CONTROL

OBJECTIVE: To acquaint the student with the necessary records that have to be kept in operating any business. It has been shown that 40% of business failures are due to lack of proper records.

SUGGESTED TEACHING TIME: 8-10 hours

SUGGESTED TEACHING TECHNIQUES:

I. Reading outside references
II. Using demonstration problems in class
III. Accounting charts
IV. 16mm film, "Bookkeeping and you," OSU Film Library

SUGGESTED ORDER OF PRESENTATION:

I. Capital requirements in businesses

  A. Profit and competition
  B. Sources of capital for small and large businesses
  C. Purposes capital needed for
  D. Obtaining needed additional capital
  E. Summary of information showing need of records to manage money wisely.

II. Requirements of a good bookkeeping system

  A. Be simple
  B. Be complete
  C. Analyzing business

III. Records required by businesses

  A. Cash sales
  B. Charge sales
  C. Customers ledger
  D. General ledger-(5 main parts)

    1. Asset accounts
    2. Liability accounts
    3. Proprietorship accounts
    4. Income accounts
    5. Expense accounts

IV. Preparation of financial statements

  A. Profit and loss statements
  B. The balance sheet

    1. Net worth

- C. Operating ratios
    - 1. Costs of operation in per cent of sales

V. Guiding the business by budgetory control -- planning ahead

- A. Sales budget
- B. Expense budget

VI. Value of bookkeeping service organizations

- A. "Mail-Me-Monday Bookkeeping and Tax Method" (See Figure 1)

VII. Knowledge of terms and definitions

- A. Net profit
- B. Markup
- C. Wholesale price
- D. Retail price
- E. Fixed cost
- F. Operating cost
- G. Variable cost
- H. Margin
- I. Gross sales
- J. Net worth statement
- K. Assets
- L. Liability
- M. Accounts payable
- N. Accounts receivable
- O. Inventory
- P. Reserve fund
- Q. Depreciation
- R. Discount
- S. Cost marks
- T. Trade credit
- U. Working capital

REFERENCES:

I. Books

A Study Guide for Placement Employment Programs in Agricultural Business and Industry, "The Interstate."

"Retailing Principles and Practices," Richert

SUGGESTED METHOD OF EVALUATION: Tests

Figure 1

____
Business Name - Address

Date ____________________

TOTAL DAYS SALES ____________________ $________
Deduct Charge Sales ____________________ ________
Leaves Cash Sales ____________________ ________
Add Collections ____________________ ________
Add Cash Start of Business ____________________ ________
TOTAL CASH $________
Deduct Cash Paid Out ____________________ ________
Leaves Cash on Hand ____________________ ________
Deduct Bank Deposits ____________________ ________
TOTAL CASH BALANCE $________

NET CASH ON HAND $________

Received on Account From

____________________ $________
____________________ $________
____________________ $________
____________________ $________
____________________ $________
Total Received on Account $________

Paid Outs For

____________	$________	____________	$________
____________	________	____________	________
____________	________	____________	________
____________	________	____________	________
____________	________	____________	________
____________	________	____________	________
____________	________	____________	________

____________________ ACCOUNTING SERVICE
Signed

THE BUYING PROCESS

Realizing that most cooperative students in the agricultural distribution area will not be responsible for buying, this major area in the cooperative training curriculum was designed for second-year study. It is felt that students who enroll in two years of cooperative training are interested in agri-business management. The members of the committee who compiled this area of the curriculum are:

Gerald Dawkins, Chairman
Robert Nunn
Robert Wood
Leon Applegate
Glynn Ashley

The Buying Process has been broken down into teaching units, involving 24 hours estimated presentation time, as follows:

Principles of Buying

Sources of Supply

Transporting and Storing Agricultural Supplies

Pricing Agricultural Products and Services

MAJOR AREA: THE BUYING PROCESS

UNIT: PRINCIPLES OF BUYING

OBJECTIVES:

I. To develop an understanding of the principles of buying
II. To develop an understanding of the qualities necessary for a successful buyer
III. To acquaint the student with a buyers vocabulary

SUGGESTED TEACHING TIME: 4 to 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Supervised study
II. Resource personnel
III. Field trips
IV. Visual aids

SUGGESTED ORDER OF PRESENTATION:

I. Purchasing problems

  A. Who will purchase

    1. Owner
    2. Partners
    3. Purchasing agent

  B. What to purchase

    1. Quality
    2. Price
    3. Brand name
    4. Demand
    5. Related items
    6. Package size

  C. When to purchase

    1. Want slips
    2. Records of past purchases and sales
    3. Comparison shoppers

  D. How much to purchase

    1. Transportation problems
    2. Storage available
    3. Capital available
    4. Price changes
    5. Demand

6. Obsolesence
7. Shrinkage
8. Spoilage
9. Discounts

II. Purchasing procedure and stock controls

A. Special abilities necessary for the good buyer

1. Knowledge of markets and ability to choose wisely
2. Factual knowledge of quality of goods
3. Trading ability

    a. Know when to bargain

        (1) When buying in quantity
        (2) Paying "spot" cash
        (3) Ordering during the "off" season
        (4) Negotiating for job lots, or "distress" merchandise
        (5) Purchasing manufacturer's clearance of broken lines, sizes, colors, or styles

4. Know the principles of mathematics of merchandising
5. Be quick to recognize special appeal items
6. Possess a working knowledge of makes, models, brands, etc.

B. Control of merchandise stock

1. Placing the order by purchase requisition
2. The purchase order
3. Handling incoming goods
4. Purchase returns and allowances
5. Storing goods
6. Inventory

    a. Cost method
    b. Retail method
    c. Perpetual method

III. Ethics in buying

A. Some things buyers should always do

1. Be loyal and act in good faith in the best interest of their employers
2. To exercise reasonable care, diligence, and skill
3. To act in person and not to delegate authority unless expressly permitted to do so.
4. Follow all lawful instructions given them
5. Render an accounting of their business acts
6. Turn over all concessions received to their employers and to make no personal profit

B. Some things buyers should not do

1. Ask for unreasonable concessions
2. Bluff to show how much you know or don't know
3. Pass "poor buy" losses on to the vendor
4. Cancel orders unfairly
5. Claim imagined short or damaged merchandise
6. Accept personal "favors" from sellers

IV. Purchasing terms

A. Expressed warranties -- A definite statement in regard to quality or performance.

B. Implied warranties -- No definite statement in regard to the article sold, but the buyer has the right to expect that it will serve the purpose for which it was sold.

C. Buying on specification -- Where buyer furnishes detailed description of the product wanted, and the seller warrents the goods to correspond to the description.

D. FOB shipping point -- The seller pays only expenses of delivery of the goods to the carrier in the city in which he is located.

E. FOB destination -- The seller pays the transportation charges to the destination.

F. Net 30 days -- Payment is to be made within 30 days from date of invoice.

G. Advance dating -- Method of encouraging buyers to purchase in advance goods they may not sell for several months by dating the payment due date in advance.

H. EOM -- The time for payment for goods is computed from the end of the month in which the merchandise is purchased.

I. ROG -- The time of payment for goods is computed from the receipt of the goods by the buyer.

J. List price -- Price quoted is on the price list and on the catalogs.

K. Trade discount -- Special deduction from list price that is made to buyers.

L. Time or cash discount -- A discount for payment made on time.

M. Anticipation discounts -- To deduct interest at a standard rate on payments made in advance of their due dates.

N. Stock card -- A card form record of articles bought and sold to use as the basis of the perpetual-inventory record.

O. Physical inventory -- A personal count and listing of every item in stock.

P. Blind-check system -- A system of checking incoming goods at a business. The checker does not receive a copy of the purchase order for comparison with the contents of the shipment. Instead the checker lists the contents on a form that is checked against the invoice by some person other than the one who counted the contents.

Q. Debit memorandum -- A form that is sent by the purchaser to the seller with returned merchandise. This form explains why the article is being returned and asks the seller to credit the purchaser's account.

R. Credit memorandum -- A form acknowledging the receipt of goods returned and the credit being granted.

S. Dollar controlled - When inventory records are kept in terms of dollars.

T. Unit control -- When inventory records are kept in terms of units.

EVALUATION: By testing or in some cases observation of their application

REFERENCES:

I. Books

Retail Merchandising, sixth edition by Wingate, (Southwestern), page 163-234.

Business Principles, Organization and Management, second edition, by Tone, Simon and McGill, (Gregg Co.), page 90-109.

**Business Principles and Management*, by Shilt, Wilson, (Southwestern), page 239-273.

Retailing Principles and Practices, by Richert, Meyer and Haines, (McGraw-Hill,) page 252-275.

**How to Establish and Operate a Retail Store*, Second Edition, by Robinson and Hass, (Prentice-Hall), page 137-166.

II. Motion Picture

Visual Aid -- "The Law of Supply and Demand, OU Film Library" 16mm.

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*Indicates best reference

MAJOR AREA: THE BUYING PROCESS

UNIT: SOURCES OF SUPPLY

OBJECTIVES:

I. To understand the sources of supply
II. To explain the market resource information
III. To point out the criteria of a good supplier

SUGGESTED TEACHING TIME: 4 hours

SUGGESTED TEACHING TECHNIQUES:

I. Answer study questions
II. Use of an overhead projector
III. Hand out of market resource information
IV. Resource personnel
V. Discussion

SUGGESTED ORDER OF PRESENTATION:

I. What are the sources of supply?

   A. Middlemen
   B. Manufacturers
   C. Farmers

II. What are middlemen in marketing? Answer: Any dealer who assists in the distribution of goods from the producer to the consumer.

III. Who are the middlemen and what are their functions?

   A. Retailer - Sells the product directly to the consumer
   B. Wholesaler - Sells the product to retailers or other wholesale outlets
   C. Broker - Representatives who bring the buyer and seller together for a fee
   D. Commission Men - One who buys or sells another's goods for a commission
   E. Manufacturers Agent - Salesmen who represents the manufacturers
   F. Auctions - A public sale of goods to the highest bidder

IV. When does a manufacturer sell direct? Answer: A manufacturer sells direct when technical services are demanded from the product or a price advantage demanded from volume sales.

V. Where can the purchaser obtain market resource information?

   A. Salesmen - This may be the traveling salesmen, wholesaler or industrial representative
   B. Trade Advertising - Direct mail, catalogs, consumers' magazines, radio, television, etc.

C. Trade News - Every major product has a trade news (i.e., food, drugs, hardware, etc.)
D. Trade Directories - This includes classified directories of wholesalers and manufacturers by trade
E. Reporting Services - Service reporting agencies which report on new and improved products
F. Market Trips - This may be a trade show or local and terminal market outlets
G. Other Buyers - Many buyers pass on information to other prospective buyers

VI. What are the criteria to consider when selecting a market source?

A. Suitability of a suppliers' lines to a buyers' customers
B. Completeness of line
C. How much the vender can or will ship
D. Speed and dependability of delivery
E. Newness of line
F. Favorable prices
G. Credit accommodations
H. Dealers aids
I. Venders pricing
J. Fairness in dealing with complaints

REFERENCES:

I. Books

Weyant, Hoover, McClay, An Introduction to Agricultural Business and Industry (The Interstate) Manual and teachers guide

Wingate, Weiner, Retail Merchandising (Southwestern, 1963)

Richert, Retailing Principles and Practices (Gregg, 1962)

Duncan, Phillips, Retailing Principles and Methods, (Irwin Inc.)

EVALUATION:

I. Discussion of study questions
II. Test over the unit
III. Oustide reports on supply sources of products

MAJOR AREA: THE BUYING PROCESS

UNIT: TRANSPORTATION AND STORING AGRICULTURE PRODUCTS

OBJECTIVES:

I. To show how transportation affects the retail price of various products
II. To teach high school students how to select the proper method of transportation for different products

SUGGESTED TEACHING TIME: 3-5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Use overhead projector to illustrate all important data involving the transportation of agricultural products
II. Have students fill out a bill of lading
III. Make a field trip to a company where agricultural products are transported
IV. Use classroom discussion

SUGGESTED ORDER OF PRESENTATION:

I. History of transportation
II. Importance of transportation

    A. Marketing, of which transportation is a part, makes up 67.5% of the retail price of food items
    B. Farm value makes up 32.5% of the retail price
    C. Transportation accounts for 11% of the marketing bill on food items
    D. The total cost of transporting agriculture goods in 1964 was over 5 billion dollars
    E. Transportation will increase the cost of lettuce shipped from California to Boston 5 cents per head

III. Factors to consider in selecting a mode of transportation

    A. Speed
    B. Cost
    C. Care of merchandise
    D. Packaging of goods to be shipped

IV. Modes of transportation

    A. Railroads

        1. Most important mode
        2. Best for long hauls
        3. Types of shipments

            a. Carload "CL"
            b. Less than carload "LCL"

4. Special freight services
    a. Store door delivery
    b. Terminal service
    c. Pool car service
    d. Peddler car service
5. Rates based on
    a. Class rates predetermined for various commodities and goods
    b. Weight - example: if rate is $1.20 per 100# and weight is 245#, cost would equal $2.94.

B. Water transport
1. Cheapest form of transportation
2. Economical for large shipments of machinery, grain, etc.
3. Extra cost may be involved in loading and unloading.
4. Water transportation is slow

C. Motor freight
1. Best suited for short hauls less than 300 miles
2. May compete favorably with railroads under some instances
3. Services offered:
    a. General freight
    b. Commodities - refrigerated products, liquid petroleum and agricultural products
4. Rates are regulated by the federal government

D. Air freight
1. Transportation furnished by commercial airlines and private companies
2. Transportation most costly, 20¢ per ton mile
3. Well suited for perishables
4. Fastest mode of transportation

V. Comparison of methods based on
A. Speed
B. Carefulness in handling
C. Convenience in handling
D. Packing requirements
E. Insurance
F. Cost

VI. Types of carriers involved in transportation
A. Common carrier

1. Carriers engaged in the carrying of personal property or goods for the public
2. Common carriers are railroads, trucking companies, steamships, air transport companies
3. Rates are fixed by the Federal Government

VII. Definitions

A. Public carriers -- provide for-hire transportation to the public
B. Demurrage -- charge for retaining cars beyond specified time. Shipper has 48 hours for unloading, 24 hours for reassignment
C. Piggyback -- hauling truck trailers on flat cars
D. Fishyback -- hauling trailers on a barge
E. Freight forwarders -- someone who consolidates a small number into truck loads, plane loads, etc.
F. Transit privileges -- the right of shipper to stop a product at a transit point for inspection, storage, or processing with the privilege of shipping that product on at its freight rate
G. Bill of lading -- represents a contract between the shipper and the railroad company
H. Freight bill -- an itemized statement covering charges for handling shipment
I. Waybill -- sheet of instructions showing the point of origin, destination, the route, the consignor, the consignee, the description, and the charges
J. Notice of arrival -- notice sent to the consignee by the transportation company when shipment has reached its destination

VIII. Career occupations

A. Manager transportation company
B. Transportation specialist

    1. For vegetables
    2. For dairy products, etc.

REFERENCES:

I. *Business Principles and Management, Shilt and Wilson

II. Careers in Agri Business, Stone

III. Agriculture Marketing, USDA Marketing Bulletin No. 36

IV. Marketing and Transportation Situations, USDA

EVALUATION: Testing

*Indicates best reference

MAJOR AREA: THE BUYING PROCESS

UNIT: PRICING AGRICULTURAL PRODUCTS AND SERVICES

OBJECTIVES:

- I. To acquaint students with factors concerning pricing policies of a retail store
- II. Acquaint students with basic economic concepts
- III. Develop the ability of the student to understand his importance in pricing goods and services
- IV. Develop the ability of the student to use pricing systems and methods at his or her training station

SUGGESTED TEACHING TIME: 4-5 hours

SUGGESTED TEACHING TECHNIQUES:

- I. Supervised study
- II. Resource personnel
- III. Outside assignment
- VI. Visual aids
    - A. Overhead projector
    - B. Newspaper advertising
    - C. Store advertising
    - D. Invoices

SUGGESTED ORDER OF PRESENTATION:

- I. Factors in retail pricing (supervised study and discussion)
    - A. The wholesale cost of merchandise
    - B. The overhead expense incurred in the business
    - C. The desired net profit
    - D. Expected markdown and stock shortages
    - E. The desirability of the article
    - F. Exclusiveness of the article
    - G. Competition
    - H. Habit and custom
    - I. The policies of the store regarding merchandising procedures
    - J. The kind of merchandise carried
    - K. Cost of doing business
        1. Payroll
        2. Rentals
        3. Advertising
        4. Taxes
        5. Interest
        6. Supplies
        7. Services purchased (such as light, heat power and delivery, etc.)
        8. Unclassified (such as cash shortages, supper money, bad debts and fraudulent purchases, pensions and retirement allowances)

9. Traveling
10. Communication (cost of telephone rentals, telegrams, cables and items of similar character)
11. Repairs
12. Insurance
13. Depreciation
14. Professional services (legal and accounting services furnished by outside firms, services of buying association, credit bureaus, and store planning organizations)

II. Definitions

A. Margin, a bookkeeping term that expresses the difference between net sales and total merchandise costs. Margin includes all operating expenses plus net profit.
B. Net Profit is the difference between the selling price and all the costs and expenses of the business.
C. Margin and Markup are used interchangeably because, expressed in money, they mean the same thing.
D. Purchase Markup is the difference between the cost of the goods and the original retail price.
E. Maintained Markup is the difference between the cost of the goods and actual sales price.
F. Leaders are certain articles of merchandise priced below cost plus overhead expenses, in order to attract customers.
G. Odd-number pricing draws attention to the lesser round sum.
H. Markdown is a reduction in the original retail price of merchandise.
I. Stock turnover is the disposal and replacement of a given stock of merchandise
J. Loss leaders are articles of merchandise sold at a loss to the store in order to attract customers.
K. Overhead expense - Expenses incurred in the operation of a business

III. Resource personnel (retail store manager)

Discussion and questions on pricing policies of retail stores.

IV. Illustrative problems in markup

A. Problem 1 - the basic equation for all problems in markup is:

cost + markup = retail

Given: Cost $1.40; markup, 30 per cent of retail (selling price)

Find: Selling price of article

(Note that retail is base, or 100 per cent)

100% = retail
30% = markup
70% = cost, or $1.40
1% = $1.40 divided by 70, or $.02
100% = 100 times $.02, or $2.00, the selling price

B. Problem 2 Retail - cost = markup

Given: Retail, \$3; cost, \$2

Find: Per cent of markup on retail

\$3 - \$2 = \$1, markup

\$1 markup = 1/3, or 33-1/3% of retail

V. Cost codes

If the store counts its stock at inventory time at cost rather than at retail price, it is necessary to show the cost of the article on the price tag. This cost price is nearly always indicated in code because the average customer does not realize the retailer's heavy expenses of operation and would assume the difference between cost and retail price to be the retailer's profit. Some retailers use a word or phrase of ten letters, each of which represents a consecutive digit. For example:

MAKE PROFIT

1234 567890

An article that costs \$19.50 would be written MIPT. Other examples of word or phrase codes are: MONEY TALKS and REPUBLICAN. Another type of code is composed of symbols, one for each digit. Here is one:

1	2	3
4	5	6
7	8	9

X = 0

The price \$19.50 is written ┘ ┌ □ X

REFERENCES:

I. Books

Retailing Principles and Practices - Richert

Business Principles and Management - Shilt and Wilson

1965 Workshop Report, Agricultural Occupations Institute-Oklahoma State University

EVALUATION: Testing

ORGANIZATION AND MANAGEMENT

Knowledge of retail business organization and problems prevalent to management were decided to be a more important part of the second-year curriculum rather than the first. Students who evidence an interest in management of agri-businesses should very definitely be given concrete information in this area. The members of the committee who compiled this major area of curriculum are:

Bill Corning, Chairman
Donald May
W. G. Parker
Samuel Stiles
Lon Shell

Suggested teaching time for second-year cooperative students is 25 hours. One of the teaching units, Preventing Accidents and Handling Emergencies, is presented here as a management problem and should be taught as such to second-year students; however, safety as an individual matter of precaution should be presented in a very definite manner to the beginning student.

Major teaching units in the area of Organization and Management are as follows:

Preventing Accidents and Handling Emergencies

Location, Store Layout, and Organization

Store Ownership

Improving an Agricultural Related Business

Again, this major area is presented as a guide for teaching. It is not expected that any teacher can follow the time schedule exactly.

MAJOR AREA: ORGANIZATION AND MANAGEMENT

UNIT: PREVENTING ACCIDENTS AND HANDLING EMERGENCIES

OBJECTIVES: To develop student understanding and appreciation of:

I. The importance of safety
II. The "safety conscious" individual
III. The importance of understanding safety regulations in each situation
IV. The "what and how" to do in the event of an emergency
V. How to prevent accidents

SUGGESTED TIME: 6 hours

SUGGESTED TEACHING TECHNIQUES:

I. Charts
II. Film
III. Discussions
IV. Demonstrations

SUGGESTED ORDER OF PRESENTATION:

I. Introduction

  A. Pre-test (see Figure 1)

II. Assignment

  A. Have students construct charts and graphs related to the importance of safety
  B. Give references
  C. Questions assignments could cover

    1. What is the yearly economic loss caused by accidents? Monthly - Daily, etc. (10 billion   300 thousand)
    2. How does the death rate of accidents compare with other causes of death?
    3. What per cent of our accidents result in temporary disability, permanent disability, death?
    4. What are the chief causes of accidents?

III. Have each student give a report on the rules and regulations governing his situation

  A. Have student use check list
  B. Have each student make suggestions as to how safety conditions could be improved
  C. Allow the class to discuss the report and suggestions

IV. Review first aid

  A. What to do

B. How to do

V. Have fire drill

VI. Demonstrate the use of the fire extinguisher

REFERENCES:

I. Books

World Congress on the Prevention of Occupational Accidents - 1958 (Brussels) Industrial Safety - Prentice-Hall

*Who is Liable for Pupil Injuries: N.E.A. Research Division, Published by National Division of Safety

Strassel - Aaron, Bohn-Edles, Fundamentals of Safety Education, (Macmillan)

Henrich, Industrial Accident Prevention, (McGraw-Hill)

Florio and Standford, Safety Education, (McGraw-Hill Book Company, Incorporated, New York, New York)

Industrial Accident Prevention, (McGraw-Hill)

Instructional Adis, Guide for Problems and Practices in First Aid and Civil Defense, (W. C. Brown and Company)

EVALUATION: Objective test

*Indicates best reference

Figure 1

Pre-test

1. In what age group do most accidents occur?
2. What is first aid?
3. What first aid treatment is given for electrical shock?
4. What are the possible results of an accident?
5. What effort is made on your part to prevent accidents?
6. How well do you follow instructions?

What to Do

1. Follow instructions.
2. Follow all safety rules.

What Not to Do

1. Don't work when you are not well.
2. Don't carry your problems on the job.

MAJOR AREA: ORGANIZATION AND MANAGEMENT

UNIT: LOCATION, STORE LAYOUT, AND ORGANIZATION

OBJECTIVES:

I. To provide the student with the basic knowledge of how to evaluate and select locations for a retail store.
II. To teach the student the general knowledge of how to place the merchandise to the best advantage in a retail store.
III. To expose the student to the fundamental skill in the organization of a store.

SUGGESTED TEACHING TIME: 4 hours

SUGGESTED TEACHING TECHNIQUES:

I. Lecture
II. Supervised study and discussion
III. Diagrams, charts, pictures, and/or color slides which have been taken of Agricultural businesses showing examples of store layouts.
IV. Overhead and/or opaque projectors might be used to show illustrations from different reference materials.
V. Students might be taken on a tour of different businesses in which locations, layouts, and organizations can be pointed out. While the student is on the tour he could make observations to be put down in notes when he returns to the classroom as to location, store layout, and organization.
VI. Resource personnel could be called in to give lectures.

SUGGESTED ORDER OF PRESENTATION:

I. Retail stores

  A. Retail store - any place that is visited by the consumer himself to purchase goods or non-professional services
  B. Types of Agriculture Retail Businesses

    1. Farm equipment
    2. Farm hardware
    3. Feed, seed, fertilizer, lime herbicides, and insecticides
    4. Supermarkets
    5. Roadside stands
    6. Nurseries
    7. Flower shops

II. The selection of retail store locations

  A. Factors to consider before locating a store in a community

    1. Population
    2. Income in the community
    3. Advertising media

4. Labor conditions
5. Services available (banks, insurance, etc.)
6. Local legislation - tax rate
7. Transportation
8. Per capital sales

B. Factors which determine the value of a location within a community

1. Accessibility to resident population
2. Adequacy of present trading area potential
3. Growth potential of area
4. Business interception - located between the people and market area
5. Cumulative attraction - other businesses help draw customers
6. Compatibility - located where customer interchange will be at a maximum
7. Competitive hazard
8. Parking
9. Site economics - analysis in terms of the relation of its cost to its productivity
10. Position on street
11. Correct side of the street
12. Number of pedestrians passing the site
13. Transportation

III. Retail store layout - The interior arrangement of a store for its selling and non-selling activities; the location of counters, display areas, aisles, elevators, and stairways, for its selling activities; storage areas, the bookkeeping department, the receiving department, etc., for its non-selling activities

A. Four objectives of layout

1. Increase sales and profit
2. Coordination of operations
3. More effective and convenient sales
4. Better store appearance

B. Factors which influence store layout

1. Type of merchandise presentation

   a. Preliminary selection - customer attracted to the goods but waits to be shown styles, colors, and sizes
   b. Preliminary choice - customer attracted to the merchandise by the display but must try on for size or receive instruction or demonstration

c. Self decision - customer attracted to the goods selects, makes a choice, and decides to buy

2. Physical consideration - wide aisles, etc.
3. Store appearance
4. Types of merchandise carried

   a. Impulse goods - should be located in areas of store which enjoy the greatest traffic
   b. Convenience goods - located in accessible location
   c. Utility goods - should not occupy prime location
   d. Luxury goods - usually do not occupy prime location
   e. Seasonal goods - should occupy prime location during season

5. Number of floors - in large stores merchandise is located by floors and is generally placed in relation to its degree of importance -- an impulse item being more important than a utility or shopping item
6. Grouping related merchandise together -- agriculture chemicals should be located in same area of store
7. Traditional location -- the merchandise is in an area where the customer is accustomed to finding it
8. Convenience for customer and store personnel
9. Store and merchandise protection
10. Customer flow -- types of arrangements to direct (it has been proven that people will ordinarily go to the right when entering a store)

    a. Free flow -- modern and simple
    b. Waffle -- more displays in front of customer
    c. Straight -- easy to arrange but customer is not confronted with a large amount of merchandise

11. Entrances and exits

C. Principles to follow for store layout

1. Clean attractive exterior with well-dressed and inviting display window
2. Well-lighted, well-ventilated, orderly store with sufficient aisle space
3. Open display of as much merchandise as possible
4. Goods plainly price marked
5. Display of goods to permit customer handling
6. Arrangements of merchandise to bring about maximum sales per customer and elimination of unnecessary steps by clerks
7. Concentration of stock in the smallest floor space possible

IV. Organization and physical arrangements involving organization

A. Identification of specific jobs in the business

B. Delegation of authority
C. Development of ways and means of providing control
D. Setting up rules for employees
E. Ease of restocking departments
F. Location of machines and equipment
G. Elimination of customer and employee hazards
H. Locations of telephones and restrooms for customers and employees
I. Location of ventilation and heating
J. Soundproofing

REFERENCES:

I. Books

*Reichert, Meyer, and Haines, Retailing Principles and Practices, (McGraw-Hill)

Richard, Lawrence, and Nelson, The Selection of Retail Locations

Robinson, Robinson, and Matthew, Store Organization and Operation

Wingate and Weiner, Retail Merchandising, (South-Western)

EVALUATION:

I. Have the students draw a layout of an actual store they are familiar with.
II. Have students suggest good and poor business locations in their own community.
III. Have the students survey two or more businesses as to employee policies and general organization.
IV. Give the students a written examination.

*Indicates best reference.

MAJOR AREA: ORGANIZATION AND MANAGEMENT

UNIT: STORE OWNERSHIP

OBJECTIVE:

The major objective in presenting this unit of study is to acquaint the high school student with the various types of store ownership. To be the most effective salesman or worker, an employee should know how the company or store for which he works is organized to do business. The opinion that a customer has of a business is often influenced by the knowledge and attitude that an employee has toward the business.

SUGGESTED TEACHING TIME: 3-4 hours

SUGGESTED TEACHING TECHNIQUES:

I. Lecture and class discussion
II. Film "What is a Corporation," 10 minutes
III. Overhead projector
IV. Panel of businessmen
V. Resource persons
VI. Field trip

SUGGESTED ORDER OF PRESENTATION:

I. Individual proprietorship (see Figure 1)

A. Advantages of individual proprietorship

1. Owner is boss
2. Owner receives all profits
3. Owner is personally acquainted with employees and customers
4. Owner can act quickly in making decisions
5. Less red tape
6. Usually pays less income tax than corporation

B. Disadvantages of individual proprietorship

1. May lack special skills and abilities
2. May lack funds
3. Bears all risks and losses
4. Owner's death may close business

II. Partnership (see Figure 1)

A. Advantages of partnership

1. Skills and abilities are pooled
2. Sources of capital are increased
3. Credit position improved
4. Each partner contributes his good will
5. Less tax burden than corporation
6. Increased concern in management

B. Disadvantages of partnership

1. Unlimited financial liability
2. Disagreement among partners
3. Each partner bound by contract of others
4. Uncertain life
5. Limited sources of capital
6. Unsatisfactory division of profit
7. Difficulty in withdrawing from partnership

C. Purpose of partnership

1. Eliminate competition
2. Retire from management
3. To realize certain operating economies

D. Cautions in entering partnerships

1. Get a lawyer to draw up the agreement. Some items to be agreed on are:

    a. Specific statement of contributions of each partner
    b. Definition of what constitutes receipts and expenses
    c. Plans and ways for financial settlements
    d. How decisions are to be reached
    e. How partnership can be dissolved
    f. Size of business
    g. Be sure you know and can trust your partner

E. Ways to operate to avoid a partnership

1. Employee-employer
2. Joint venture
3. Limited partnership
4. Landlord-tenant
5. Debtor-creditor
6. Corporation

F. A limited partnership is designed to reduce the disadvantages of unlimited liability for those willing to forego a voice in management.

1. Must be filed with the county clerk in the county
2. Must show names and addresses of general and limited partners and contributions of each
3. Limited partner must exercise no voice in management
4. Limited partner has priority over general partner in recovery of capital
5. Death of limited partner transfers all his rights and liabilities in the partnership to his administrator

III. Corporation (film - 10 minutes) (see Figure 1)

A. What is a corporation?

1. A corporation is an organization formed under the authority obtained from the state and is treated at law as an artificial person separate and apart from its owners.

2. Corporation examples

    a. City-Union City, Oklahoma
    b. Civic Club-Lions Club
    c. Business-Texaco
    d. Youth organization-FFA

B. How is a corporation formed?

1. File a certificate of incorporation with state government, signed by three persons, one of whom is a resident of the state.
2. What are the parts of the certificate?

    a. Name of company-has to have Inc., the word "Incorporated," or "Limited."
    b. Purpose of the company
    c. Life of the corporation
    d. Capital that the corporation is authorized to have
    e. Names of at least three directors
    f. Address of the corporation

C. What are the advantages of a corporation?

1. Limited liability -- each stock holder is limited to the amount of his investment
2. Only designated officers can bind in contract
3. Continued existence
4. Tremendous growth possibilities
5. Opportunity for expert management and large scale economics

D. Disadvantages of a corporation

1. High taxes
2. Government regulation
3. Credit depends on its assets alone
4. Possibility of inefficiency and red tape
5. Separation of ownership and management

E. What are the types of corporations?

1. Closed or family type corporation
2. Public or open corporation

F. Who manages the corporation? -- Officers

G. What are the stocks?

1. Common
2. Preferred

H. Stock values

1. Par value -- printed on the stock
2. Market value -- on what the buyer and seller agree
3. Book value -- actually what the stock is worth on the books of the corporation

IV. Other forms of business organization

A. Cooperatives -- a special corporate form of organization operated to supply goods or services to its members, who are its owners.

1. Characteristics of a cooperative

   a. The cooperative organization ordinarily is created by a state and operates under the provisions of a charter.
   b. The management is by an elected board of directors and officers. Each member has one vote regardless of the number of shares he owns.
   c. Capital is provided by sale of shares and by membership fees. Usually a fixed rate of return is set on shares.
   d. Cooperatives operate on the principle that goods and services will be priced at cost to members; hence, there is no profit. An accumulation of funds resulting from operations is returned to members as patronage dividends.
   e. Members are not liable for the debts of a cooperative.
   f. Death or withdrawal of a member does not affect the operations of a cooperative. Usually shares are not transferable.

B. Mutual companies -- corporations owned by the people who do business with them.

REFERENCES:

I. Books

*Tonne, Simon & McGill, Business Principles, Organization and Management (McGraw-Hill)

*Wilson & Eyster, Consumer Economic Problems, (Southwestern)

Shilt & Wilson, Business Principles and Management, (Southwestern)

"Course of Study in Non-farm Agricultural Occupations," University of Kentucky, 1965

II. Film

"What is a Corporation" 16mm film, 10 minutes, OSU Film Library

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*Indicates best references

SUGGESTED METHODS OF EVALUATION:

I. Review Figure 1

II. Examination

III. Study Questions

- A. What is an individual proprietorship type of ownership?
- B. What is a partnership type of ownership?
- C. What is a corporation type of ownership?
- D. What is a cooperative type of ownership?

Figure 1. FACTS ABOUT THE FOUR KINDS OF BUSINESSES

Consideration	Individual Proprietorship	Partnership	Corporation	Cooperative
How set up	By owner	By agreement among partners	By investor	By people needing goods
Why set up	To sell to others	To sell to others	To sell to others	To serve members
Controlled by	Owner	Partners	Owners of majority stock--one vote for each share owned	Members--one vote each
Purpose of investment	To earn profits	To earn profits	To earn profits	To provide a service to members and others
Disposition of earning (other than income taxes)	All to owner	All to partners	Pay dividends to stockholders and retain reserves in the business	Pay interest or dividends on shares; return patronage refunds to patrons (what would be profit in a corporation) and retain reserves. Non-stock co-ops do not have shares.
Taxed in the business	Nothing	Nothing	All earnings	All earnings*
Taxed to recipients	All earnings	All earnings	Dividends	Interest or dividends and patronage refunds where they constitute income
Double taxed	None	None	Dividends	Interest or dividends on shares
Taxed once	All earnings	All earnings	Reserves	Reserves and patronage refunds (to recipients)

*Those farmer co-ops that qualify under Section 521 of the Internal Revenue Code pay no taxes on interest (dividends) paid on shares. However, their members are taxed on the interest or dividends.

FACTS ABOUT THE FOUR KINDS OF BUSINESSES

Consideration	Individual Proprietorship	Partnership	Corporation	Cooperative
How set up				
Why set up				
Controlled by $				
Purpose of investment				
Disposition of earning (other than income taxes)				
Taxed in the business				
Taxed to recipients				
Double Taxed				
Taxed once				

MAJOR AREA: ORGANIZATION AND MANAGEMENT

UNIT: IMPROVING AN AGRICULTURAL RELATED BUSINESS

OBJECTIVES:

I. To discover ways the employee can learn more about the business and be a better partner.
II. To stimulate interest in employees, leading to a further improving of the business in which he is employed.

SUGGESTED TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Read suggested references (student)
II. Contribute to class discussion (student)
III. Allow each student 10 minutes to fill out questionnaire
IV. Multiple copies of the questionnaire
V. 16mm film, "Going Places," OSU Film Library
VI. Observe practices within your business
VII. Copies of information outline

SUGGESTED ORDER OF PRESENTATION:

I. Introduction: What do you know about the business in which you work?

  A. Is made by a connective statement "Backward Connection" of previous study units on organization and management
  B. Is made by "Forward" statement - Just how important is it that the employee be well informed about the business? Why?
    "Get responses and pass out questionnaire" Allow 10 minutes to check - Student keep questions. Some of you made 90

II. Problem:

  A. If student trainees are going to help with recommending changes in the management or operation of the business in which they are employed eventually, they must know quite a bit about the business. How can they best get this information?
  B. The process of planning for improvement includes three basic steps

    1. Finding out the present level of operation
    Outline:

      a. Figures on annual sales
      b. Returns on money invested
      c. Net profit
      d. Cash flow
      e. Net worth

2. Choosing appropriate goals to set for improvement
   Outline:

   a. If you wish to increase profit

      (1) Increase receipts
      (2) Decrease expenses
      (3) Charge more for goods
      (4) Pay less for items purchased

   b. If employees drive customers away

      (1) Improve quality of service
      (2) Introduce new practices

C. Evaluation is a continuous process which must not be neglected

   1. Quality of merchandise sold
   2. Quality of service offered
   3. Employee training program
   4. Finances of business
   5. Customer relationship
   6. Safety
   7. Employee morale
   8. Working conditions
   9. Customer credit arrangements
   10. Prices charged for goods or service
   11. Volume of sales
   12. Location of business
   13. Layout and general appearance
   14. Promotion
   15. Quality of personnel
   16. Quality of management

D. Code of ethics

   1. Code of ethics for student employee

      a. Do not discuss private information

         (1) Collection problems
         (2) Personal problems
         (3) Appearance and manners
         (4) Know the merchandise
         (5) Learn store policies and store systems
         (6) Loyalty

             (a) speak well of the employer
             (b) use the products

   2. Code of ethics for business

"Note" Close class discussion with the showing of film.

REFERENCES:

I. Books

Richert, Meyer, and Haines. Retailing Principles and Practices. (Fourth Edition, McGraw-Hill Book Company, Incorporated, New York, New York.)

Study Guide for Placement - Employment Programs in Agricultural Business and Industry, (The Interstate Printers and Publishers, Danville, Illinois.)

II. Film

16mm film "Going Places," OSU Film Library

EVALUATION: Pass out evaluating outline. Have student to evaluate the business where he is employed.

CAREER OPPORTUNITIES IN AGRICULTURAL BUSINESS

There was much discussion among the members of the 1966 Agricultural Occupations Institute as to when this major area of study should be presented in the four-year agricultural curriculum. Many of the teacher-coordinators in the cooperative experience program will be teaching classes of Agriculture I and II. It is anticipated that some career information in the field of agriculture will be presented to the beginning freshmen and sophomore students. In order to give complete coverage in this area, it was decided by institute members that it should be presented in brief form during the orientation period and in depth during the last six weeks of the second year to the cooperative experience student. Committee members who compiled this major area of the curriculum are:

Hallard Randell, Chairman
Arlie Goforth
Ed Perry
Glenn Gardner
Dwight Blankenship

The teaching units into which this major area have been divided for presentation to the second-year students are as follows:

Occupational Information

Modern Agriculture

Exploring Occupations

Opportunities in Agriculture

Planning an Occupational Future

It was suggested by the members of this committee that 25 hours would be required for presenting information to the second-year student just before he leaves high school for college or the work world regarding his opportunities in agricultural business.

MAJOR AREA: CAREER OPPORTUNITIES IN AGRICULTURAL BUSINESS

UNIT: OCCUPATIONAL INFORMATION

OBJECTIVES:

I. To develop student understanding and appreciation of:

   A. The importance of exploring various occupations at this time in order to locate broad areas of agricultural interests.
   B. The importance of broad areas of agricultural training for our rapidly changing economy.
   C. The importance of choosing a life's work.

SUGGESTED TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Charts - example - Dupy's spider web - have students make one (See Figures)
II. Overhead projector
III. Class discussion
IV. Films
V. Committees
VI. Supervised reading

SUGGESTED ORDER OF PRESENTATION:

I. List on the chalkboard various jobs in agriculture that students can name quickly in the community, county, state, and nation.

   A. Use charts showing jobs related to production agriculture

II. Discuss with class pertinent points found in Your Farm Background and Agri-business Selling such as:

   A. Farm Progress
   B. Nation wide growth
   C. Salesmanship

III. Supervised reading in Exploring Careers in Modern Agriculture, pages 1 to 4, and Career Exploration, pages 1 to middle page 9. Discuss meaning of:

   A. Career
   B. Occupational information and occupational guidance
   C. Skilled worker, technician, and professional worker

IV. Discuss major satisfaction people receive from work:

   A. Creativity
   B. Companionship
   C. Belonging

- D. Service
- E. Security
- F. Success and advancement
- G. Working conditions

V. Discuss why people are satisfied in many different kinds of jobs.

VI. Discuss what reasons may be given to justify a study of careers.

VII. Discuss the many different occupations which may be found represented in agriculture.

VIII. Discuss some of the career hazards:

- A. Short-changing oneself
- B. Parental influence
- C. Friends' influence
- D. Unplanned career
- E. Career closemindedness
- F. Career dislike
- G. Selling oneself short

REFERENCES:

I. Books

Your Farm Background and Agri-business Selling

Exploring Careers in Modern Agriculture

Career Exploration

EVALUATION:

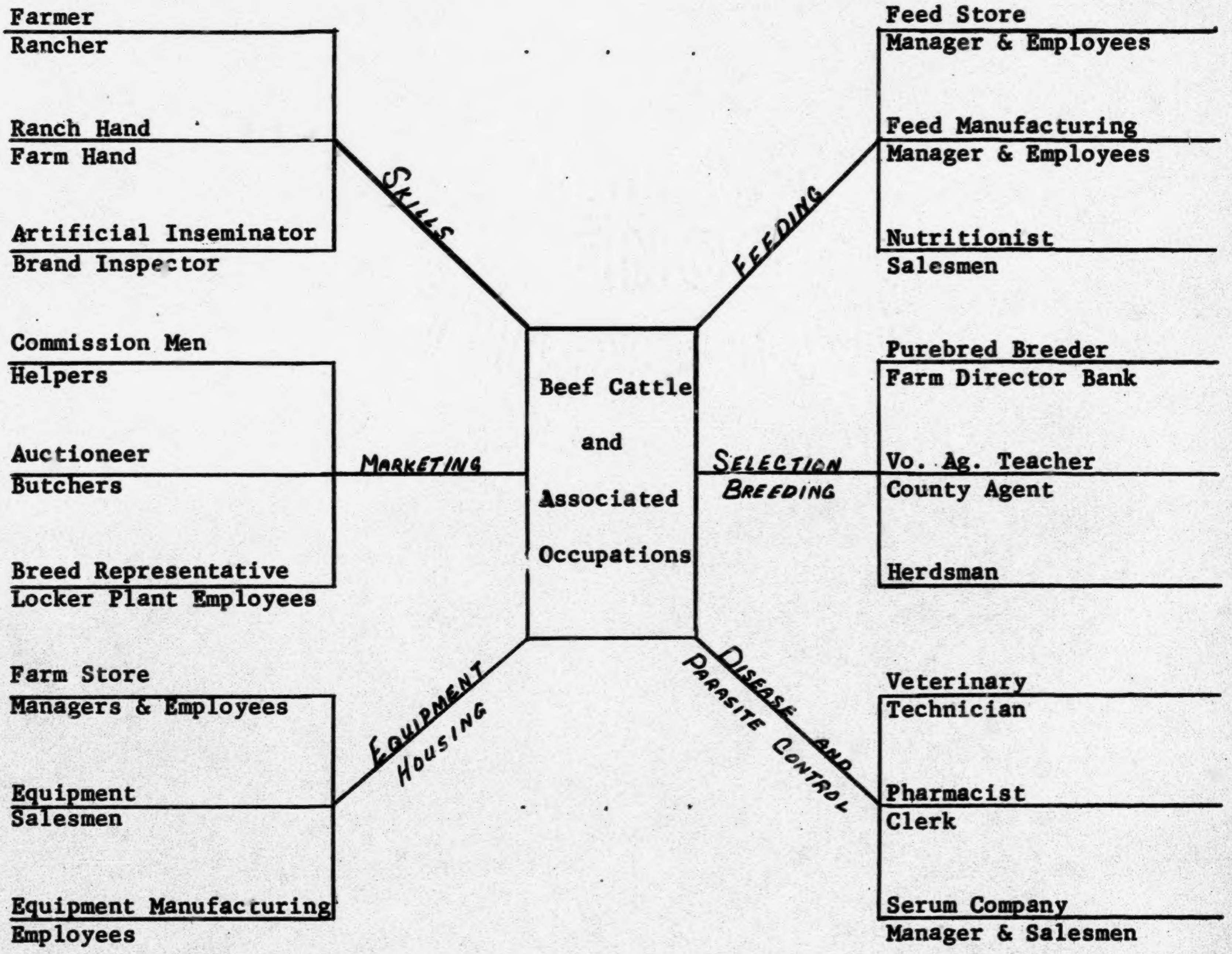
I. Testing

II. Making an occupational survey

Figure 1

Animal Science and Associated Occupations

Beef Cattle

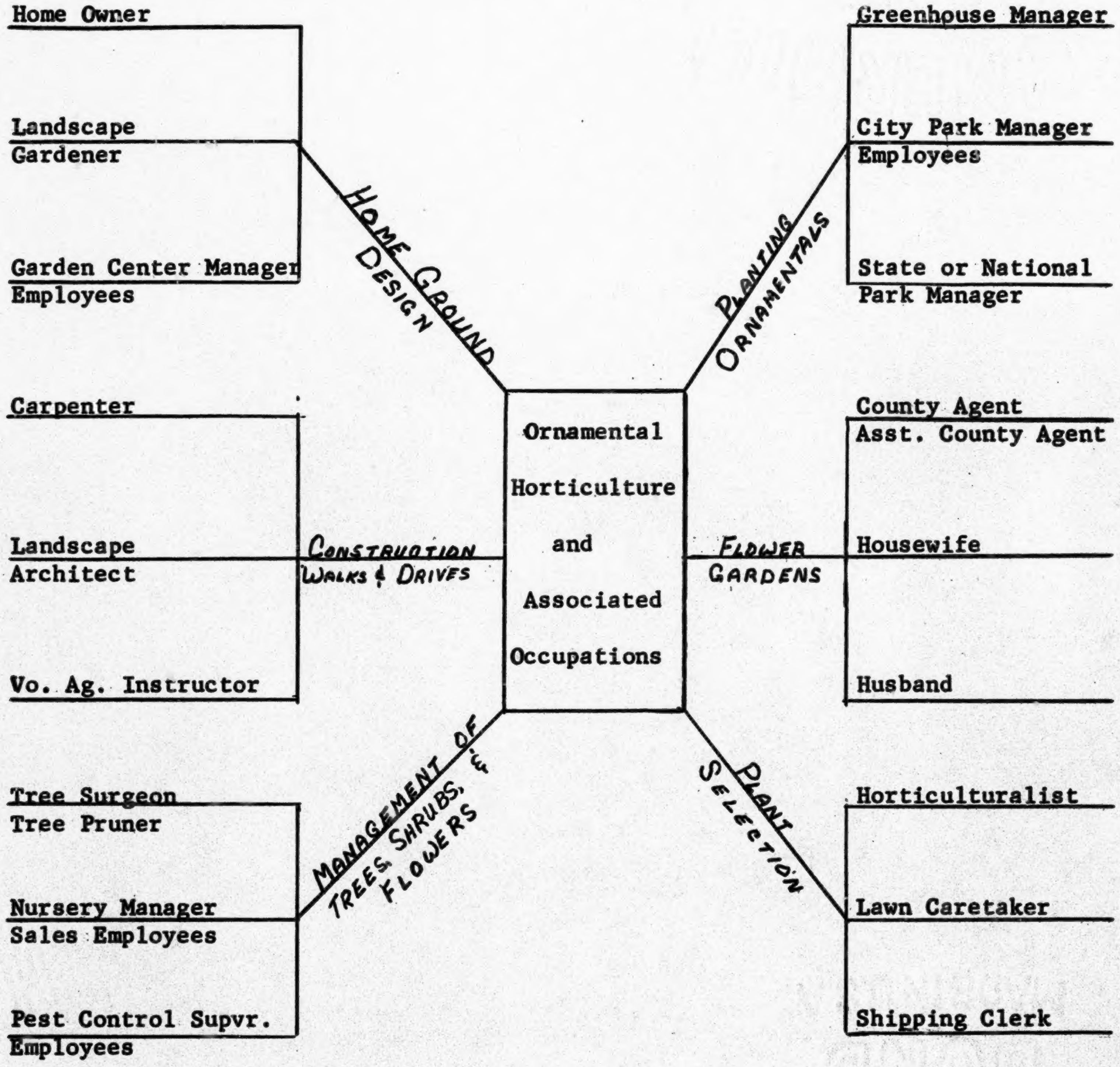

Farmer
Rancher
Ranch Hand
Farm Hand
Artificial Inseminator
Brand Inspector
SKILLS
Feed Store
Manager & Employees
Feed Manufacturing
Manager & Employees
Nutritionist
Salesmen
FEEDING
Commission Men
Helpers
Auctioneer
Butchers
Breed Representative
Locker Plant Employees
MARKETING
Beef Cattle
and
Associated
Occupations
SELECTION
BREEDING
Purebred Breeder
Farm Director Bank
Vo. Ag. Teacher
County Agent
Herdsman
Farm Store
Managers & Employees
Equipment
Salesmen
Equipment Manufacturing
Employees
EQUIPMENT
HOUSING
DISEASE AND
PARASITE CONTROL
Veterinary
Technician
Pharmacist
Clerk
Serum Company
Manager & Salesmen

This breakdown of jobs and occupations may not fit every community and may not include nearly all of the occupations that are a part of the beef cattle industry. It only shows how beef cattle and associated occupations can be tied together and taught in the same unit of instruction.

Figure 2

Horticulture and Associated Occupations

Ornamental Horticulture


Home Owner
Landscape Gardener
Garden Center Manager Employees
HOME GROUND DESIGN
Greenhouse Manager
City Park Manager Employees
State or National Park Manager
PLANTING ORNAMENTALS
Carpenter
Landscape Architect
Vo. Ag. Instructor
CONSTRUCTION WALKS & DRIVES
Ornamental Horticulture and Associated Occupations
FLOWER GARDENS
County Agent
Asst. County Agent
Housewife
Husband
Tree Surgeon
Tree Pruner
Nursery Manager
Sales Employees
Pest Control Supvr. Employees
MANAGEMENT OF TREES, SHRUBS, & FLOWERS
PLANT SELECTION
Horticulturalist
Lawn Caretaker
Shipping Clerk

A breakdown of occupations could be developed in class with the students. This is only a suggested list. The students' interest and the availability of reference material would aid in developing the material to be taught and the occupations that would be listed.

MAJOR AREA: CAREER OPPORTUNITIES IN AGRICULTURAL BUSINESSES

UNIT: MODERN AGRICULTURE

OBJECTIVES: To develop student understanding and appreciation

I. The modern concept of agriculture
II. The effect of modern agriculture upon the entire system

TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Resource personnel
II. Superivsed study and discussion
III. Overhead projector
IV. Field trips

SUGGESTED ORDER OF PRESENTATION:

I. Introduction:

In the future, you will have to make one of life's most important decisions -- choosing a career. Fortunately, our democratic form of government permits you to select one of the 40,000 different types of jobs in the United States. This freedom of choice and wide variety of occupations presents you with a challenging problem. (See Figure 1)

Modern agriculture encompasses a broad field of work and a wide range of occupations. It deals with jobs in producing, processing, distributing, and marketing of food and fiber. Thus, farming is only one phase of agriculture. Other phases involve business, industry, education, research, specialized service, communications, conservation and recreation.

II. Why is Agriculture Big Business:

A. It employs approximately 40% of 65 million people in the United States. (See Figure 2)
B. The average investment per farm is 36,000 to 43,000 dollars.
C. The investment in agriculture represents an average of $21,300 for each farm employee, as compared with an average of $15,900 for each worker in manufacturing industry. (See Figure 3)
D. Oklahoma's farms and ranches represent a capital investment of $4 billion.
E. Oklahoma's farm income currently amounts to more than $700,000,000 annually.
F. The added value of manufacture of farm products add another $130 million annually.

III. New Agricultural Terms:

A. Agrindustry

1. The industry producing agricultural commodities.
2. The industries and businesses supplying and servicing those engaged in agricultural commodity production.
3. The industries and businesses performing all the necessary functions in making agricultural commodities available to the consumer.

B. Agribusiness

1. Business of producing
2. Business of processing
3. Marketing feed and food

C. Off-Farm Agriculture Occupations

1. Those occupations that require a knowledge of some phase of farming
2. Involves working with rural people
   a. Equipment or services used in production
   b. Processing or marketing of agriculture products

D. Agricultural Professions

1. Highly specialized occupations requiring college or university training
   a. Bankers
   b. County agents
   c. Agriculture professors and advisors
   d. Veterinarians
   e. Sales and servicemen
   f. Engineers

E. Modern American Farmer

1. Small grain farmer
2. Beef cattle
3. Dairy
4. Poultry
5. Swine
6. Ceral grains
7. Vegetable
8. Fish
9. Or a combination of any of the above

REFERENCES:

I. Books

*Exploring Careers in Modern Agriculture
Now 10 Years Later, Still Fewer, Larger and Richer, Wildrick and Miller, Inc.

*An Introduction to Agricultural Business and Industry, Weyant, Hoover, McClay (The Interstate) -- Manual and Teacher's Guide.

EVALUATION: Test

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*Indicates Best References

Figure 1

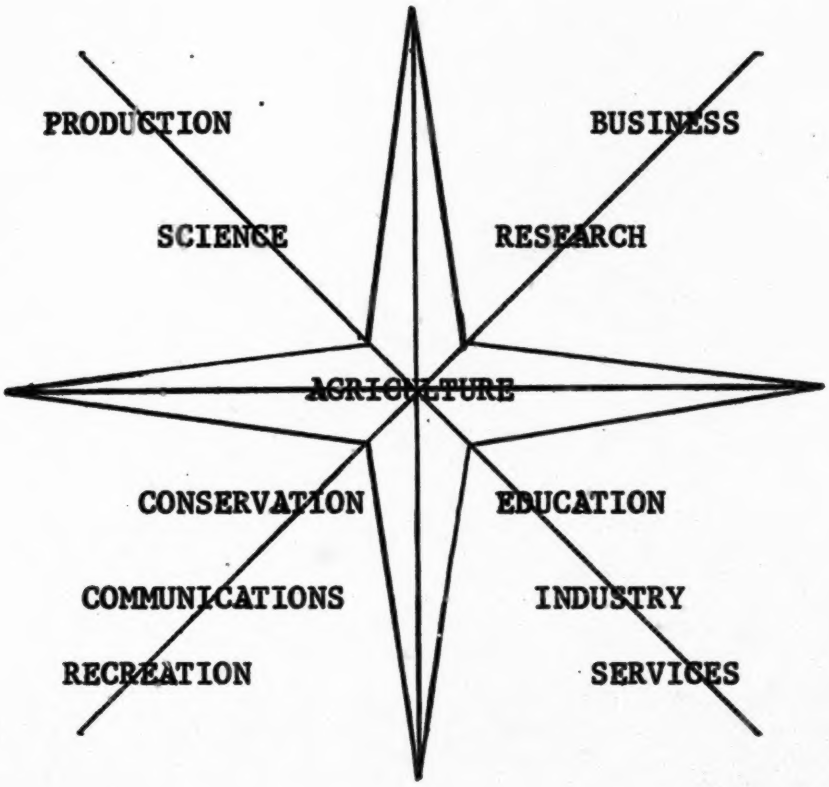

PRODUCTION
BUSINESS
SCIENCE
RESEARCH
AGRICULTURE
CONSERVATION
EDUCATION
COMMUNICATIONS
INDUSTRY
RECREATION
SERVICES

Figure 2

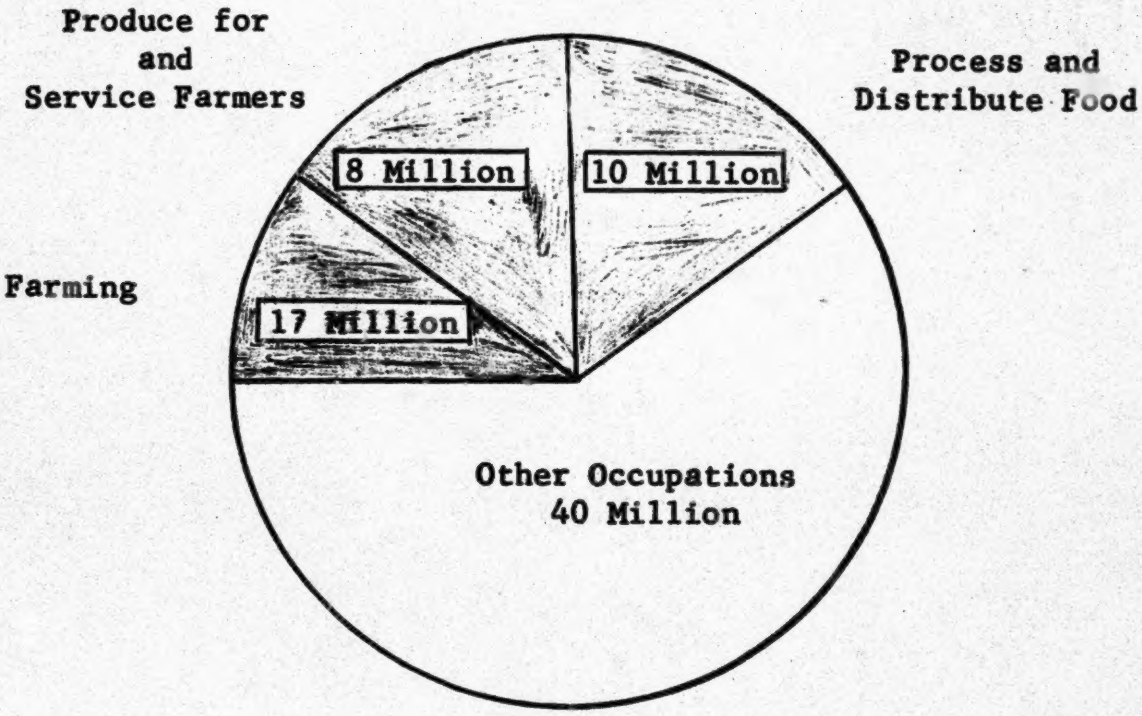


Figure 3

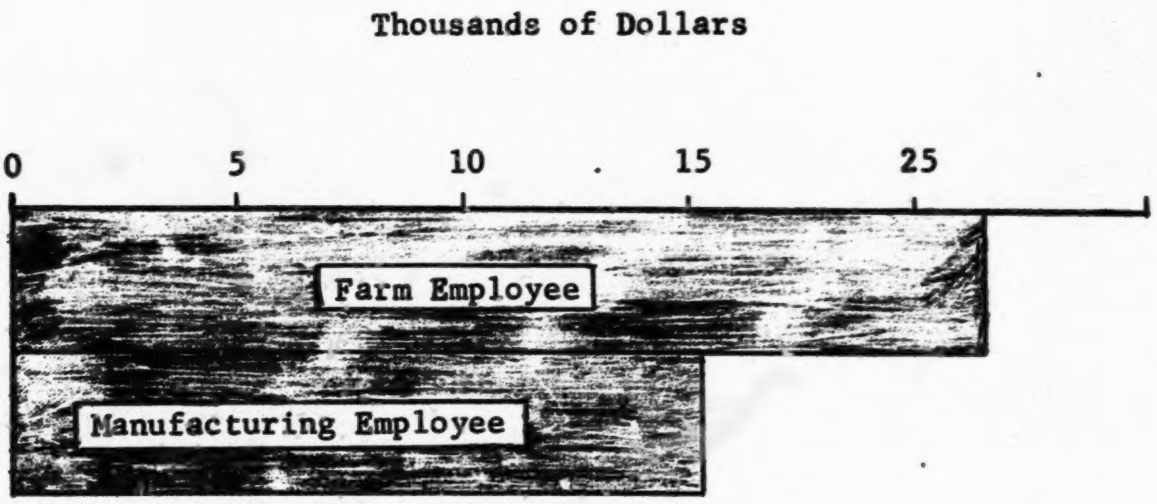
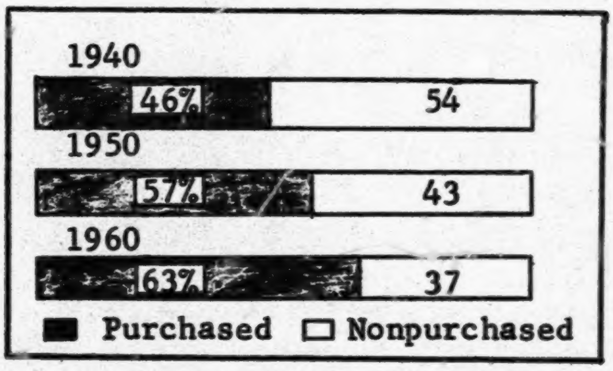


Figure 4



Farmers Now Purchase 63 Per Cent of Inputs

MAJOR AREA: CAREER OPPORTUNITIES IN AGRICULTURAL BUSINESSES

UNIT: EXPLORING OCCUPATIONS

OBJECTIVES: To develop student understanding and appreciation of:

I. The value of education and training
II. The extent and variety of agricultural occupations
III. The important steps in exploring occupations

SUGGESTED TEACHING TIME: 4-6 hours

SUGGESTED TEACHING TECHNIQUES:

I. Class lecture and discussion
II. Film: "A Step Ahead" - "Dynamic Careers Through Agriculture"
III. Overhead projector
IV. Resource personnel
V. Supervised study - career briefs

SUGGESTED ORDER OF PRESENTATION:

I. Introduction - All students should set as their goal to evaluate throughly and fairly agriculture (of which farming is a part) as a possible career.
II. The important steps in considering any occupation

   A. Looking at the job
   B. Individual appraisal
   C. Matching the individual with the job

III. Review the types of work in the various occupational areas as given by the United States Bureau of Census

A. Farming	10.2%	Refers to those actually engaged in the production of food.
B. Clerical and sales	20.5%	Refers to people who sell, such as clerks in stores and salesmen of various kinds.
C. Craftsman	13.2%	Refers to those who have had training and perform jobs such as builders, plumbers and electricians.
D. Operatives	17.4%	Refers to those who operate machines of various kinds such as elevators or machine tool operators.
E. Services	12.1%	Refers to those who perform services for others such as boot blacks, barbers, and beautician.
F. Laborers	5.9%	Refers to those who have no saleable skills and have had no training--found in many job areas.

G. Owners and managers	10.4%	Refers to those who operate businesses, factories, etc.
H. Professional	10.3%	Refers to those who are in jobs which require education or equivalent.
I. Agriculture	38.0%	Includes persons in all other types above who service farmers, process, transport, and market farm products.

IV. Prestige jobs - As rated by the National Opinion Center (90 different occupations rated by 2900 persons)

Occupation	Score
U. S. Supreme Court Justice	96
Physician	93
State Governor	93
Cabinet member in the federal government	92
Diplomat in the U.S. Foreign Service	92
Mayor of a large city	90
College Professor	89
Scientist	89
United States Representative in Congress	89
Banker	88
Government scientist	88
County judge	87
Head of department in a state government	87
Minister	87
Architect	86
Chemist	86
Dentist	86
Lawyer	86
Member of the board of directors of a large corporation	86
Nuclear physicist	86
Priest	86
Psychologist	85
Civil engineer	84
Airline pilot	83
Artist	83
Owner of factory that employs about 100 people	82
Sociologist	82
Accountant for a large business	81
Biologist	81
Musician in a symphony orchestra	81
Author of novels	80
Captain in the regular army	80
Building contractor	79
Economist	79
Instructor in the public schools	79
Public school teacher	78
County agricultural agent	77
Railroad engineer	77
Farm owner and operator	76
Official of an international labor union	75
Radio announcer	75
Newspaper columnist	74
Owner-operator of a printing shop	74

Occupation	Score
Electrician	73
Trained machinist	73
Welfare worker for a city government	73
Undertaker	72
Reporter on a daily newspaper	71
Manager of a small store in a city	69
Bookkeeper	68
Insurance agent	68
Tenant farmer	68
Traveling salesman	68
Playground director	67
Policeman	67
Railroad conductor	67
Mail carrier	66
Carpenter	65
Automobile repairman	63
Plumber	63
Garage mechanic	62
Local official of a labor union	62
Owner-operator of lunch stand	62
Corporal in the regular army	60
Machine operator in a factory	60
Barber	59
Clerk in a store	58
Fiserman who owns his own boat	58
Milk routeman	54
Restaurant cook	54
Truck driver	54
Lumberjack	53
Filling station attendant	52
Singer in a night club	52
Farm hand	50
Coal miner	49
Taxi driver	49
Railroad section hand	48
Restaurant worker	48
Dock worker	47
Night watchman	47
Clothes presser in a luandry	46
Soda fountain clerk	45
Bartender	44
Janitor	44
Share cropper	40
Garbage collector	35
Street sweeper	34
Shoeshiner	33

V. Discuss the values of education and training in the future world of work

A. Education is vital

B. Education means greater opportunity--The Occupational Ladder (see figure 3)

VI. Discuss with the students the major divisions of a career brief of occupational study outline and the importance of them making occupational comparisons.

- A. Example - Soil conservationist (G.S. -4-5-7)
- B. Have each boy prepare a career brief
    1. Description and nature of work
    2. Working conditions
    3. Education and personal qualifications
    4. How to enter and advance in the occupation
    5. Approximate salary - beginning and potential

VII. What are the main sources of occupational information?

- A. Counselor office; the school library; subject-matter teacher's classroom
- B. Information can be obtained from professional and technical schools, state employment bureaus, magazine articles, publishing companies, and audio-visual materials.
- C. Interviews with workers or with those acquainted with the occupation
- D. Obtaining information firsthand by means of field trips or individual visits to a person's place of business

VIII. Approaches to be used in making an individual appraisal

- A. Self appraisal - preferences - interests - abilities
    1. Do I prefer working with things (test tubes, mechanical objects, animals)?
    2. Do I prefer working with facts, figures, ideas (writing, clerical work, research)?
    3. Do I prefer working with people (teaching sales, dramatics, sports)?
    4. What kind of work would I like to be doing five, ten or fifteen years from now?
- B. Appraisal by others - teachers, guidance counselors, others
- C. Appraisal through tests
    1. Aptitude tests
    2. Interest tests
    3. Personality tests
    4. Achievement tests

IX. A suggested procedure for matching the individual with the job-steps in building toward a successful career (See Figure No. 1)

REFERENCES:

Books

Agricultural Occupations - (The Interstate Printers and Publishers).
Exploring Careers in Modern Agriculture - OSU Booklet by Jimmie Wolf.
Career Exploration - OSU Booklet by Jimmie Wolf.

Non-Farm Agricultural Occupations - Department of Agriculture Education, University of Kentucky.

* Career Exploration - Extension Service, Virginia.

An Introduction to Agricultural Business and Industry by Weyant, Hoover, and McClay.

Handbook of Agricultural Occupations by Hoover.

* Careers in Agri Business and Industry by Archie A. Stone.

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* Indicates best references

Films (Careers in Agriculture)

*Dynamic Careers Through Agriculture - 28 Minutes - Color - (Farm Film Foundation) - A very excellent film on opportunities open to young people in agriculture.

Careers in Chemistry - 15 Minutes - Color - (Farm Film Foundation) - Careers applicable to agriculture

Dynamics of Animal Agriculture - 26 Minutes - Color - (Farm Film Foundation) - Contributions of animal agriculture to the growth of a nation

This is the Dairy Industry - 24 Minutes - Color - (American Dairy Association) - Carrer opportunities open to young people in one of the largest industries

*A Step Ahead - 12½ Minutes - Color - (New Holland Machine Company) - Theme is careers in agriculture

Agriculture Engineering - 14 Minutes - Color - (USDA) - Designed to interest high school students in a career in agricultural engineering

Breakthrough - 27½ Minutes - Color - (USDA) - Designed to interest students in a career in agricultural research

The Federal Veterinarian in Agriculture - 13½ Minutes - Color - (USDA) - The film portrays the veterinarian's vigilance at our borders, seaports and airports and his research activities.

Forest Service Engineer - 24½ Minutes - Color - (USDA) - The challenge of a forest service career

From the Ground Up - 13 Minutes - Color - (USDA) - Tells the story of soil conservation and the soil surveyor

It's the Farmer's Business - 14 Minutes - Color - (USDA) - Business methods of marketing and purchasing and application of sound business methods

We Show the Way - 15 Minutes - Color - (USDA) - Tells the story of the Federal-State Extension Service

*Best films

Figure 1

Steps in Building Toward a Successful Career

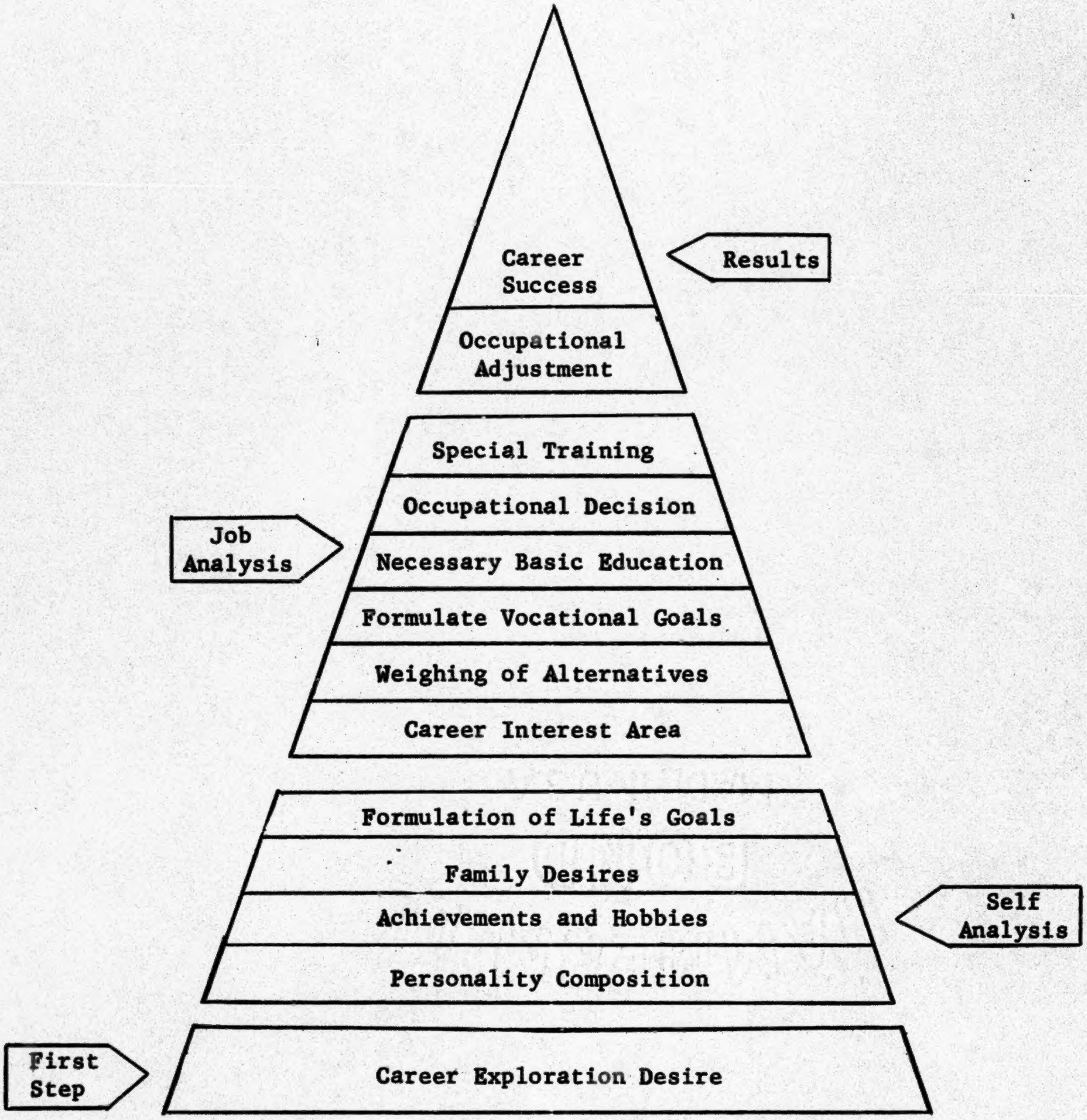
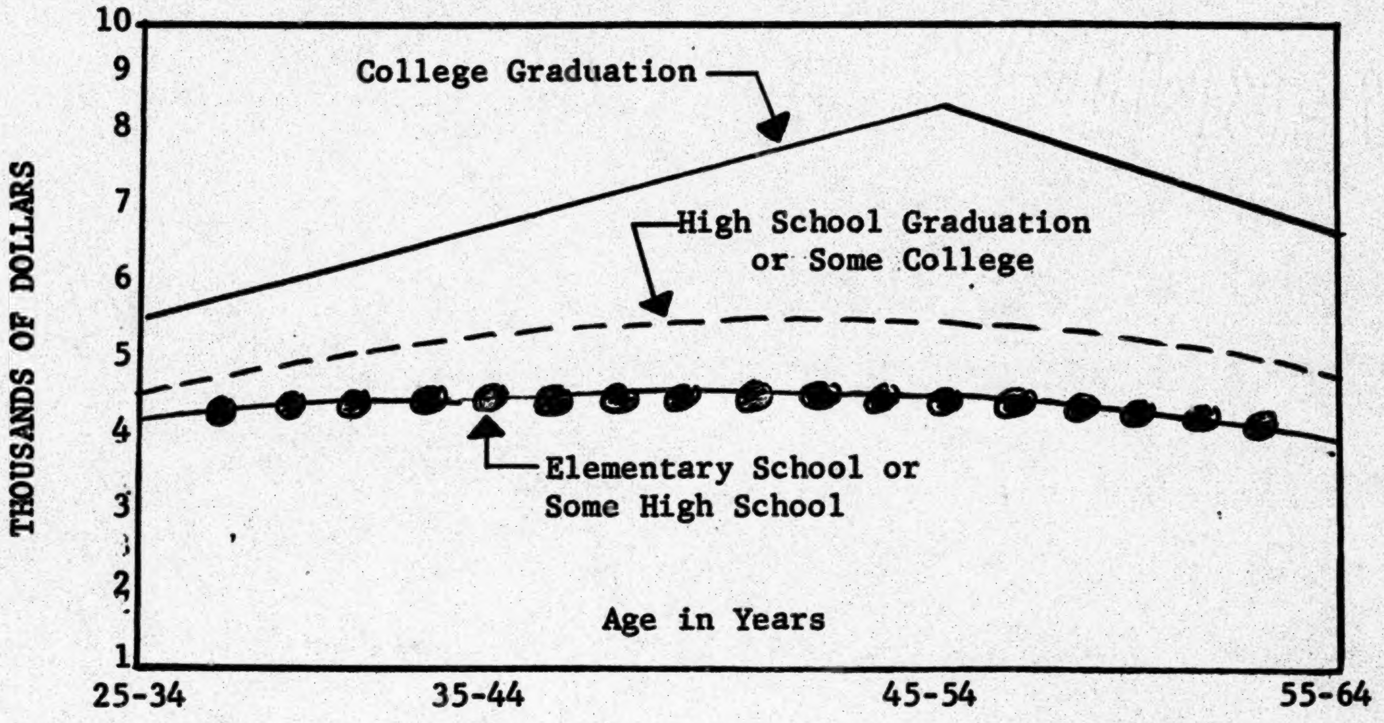

Career Success
Results
Occupational Adjustment
Special Training
Occupational Decision
Job Analysis
Necessary Basic Education
Formulate Vocational Goals
Weighing of Alternatives
Career Interest Area
Formulation of Life's Goals
Family Desires
Achievements and Hobbies
Self Analysis
Personality Composition
First Step
Career Exploration Desire

Figure 2

EDUCATION IS ONE OF THE FACTORS AFFECTING INCOME

AVERAGE ANNUAL INCOME OF MEN IN 1956,
BY YEARS OF SCHOOL COMPLETED AND AGE



LIFETIME INCOMES

Workers with	can expect
8th Grade	$182,000
High School Graduate	$258,000
4 Years College	$435,000

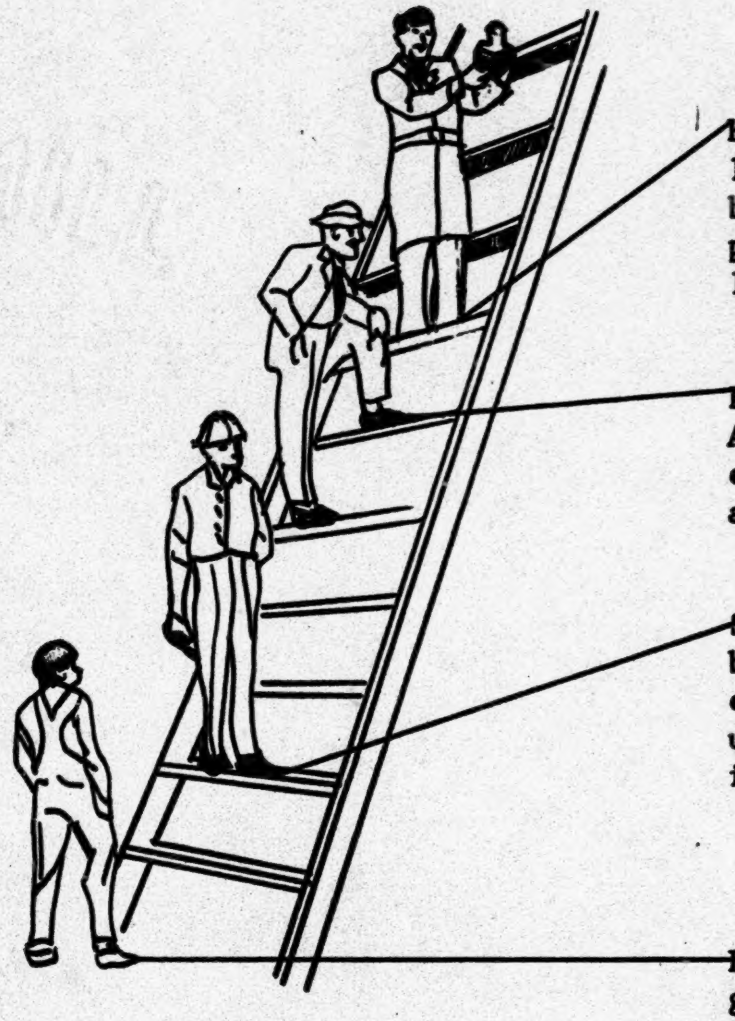
Source: Career Exploration. Circular 864, V.P.I. Agricultural Extension Service, Blacksburg, Virginia.

Figure 3

> "There is no truer and more abiding happiness than the knowledge that one is free to go on doing, day by day, the best work one can do, in the kind one likes best, -- perfect freedom is reserved for the man who lives by his own work and in that work does what he wants to do."

Career exploration taken seriously will help you find success and contentment in any job you may choose.

THE OCCUPATIONAL LADDER



HIGHER EDUCATION: Income at high level; professional job status; better choice of jobs; better prepared to utilize opportunities in life.

HIGH SCHOOL AND SPECIAL TRAINING: Average or better pay; steadier employment; more easily retrained; adequate family support.

SLIDERS: Not high school graduate; below average pay; often underemployed; inferior job status; unprepared for job training; irregular family support.

DROPOUTS: Failed to finish 8th grade; low wages; high unemployment; inferior job status; family support at low level.

Figure 4

KNOW YOURSELF - - - - - AGRICULTURAL AREAS OF INTEREST AND WORK ACTIVITIES

Agricultural Areas	Kinds of work activities						
	Communi-cations	Distribution and sales	Education	Growing (labor and management)	Manufacturing, construction, and processing	Research	Services (including repair and maintenance)
Buildings				XXXXXXXXXX XXXXXXXXXX			
Beef							
Chemicals				XXXXXXXXXX XXXXXXXXXX			
Conservation		XXXXXXXXXXX XXXXXXXXXXX		XXXXXXXXXX XXXXXXXXXX			
Credit and Finance				XXXXXXXXXX XXXXXXXXXX	XXXXXXXXXXX XXXXXXXXXXX		
Crops (grain forages, etc.)							
Dairying							
Electricity				XXXXXXXXXX XXXXXXXXXX			
Fertilizers				XXXXXXXXXX XXXXXXXXXX			
Floriculture					XXXXXXXXXX XXXXXXXXXX		
Forestry							
Fruit and nut trees							
Fruits, small							
Greenhouse plants					XXXXXXXXXXX XXXXXXXXXXX		
Horses					XXXXXXXXXXX XXXXXXXXXXX		
Landscaping				XXXXXXXXXX XXXXXXXXXX	XXXXXXXXXXX XXXXXXXXXXX		
Law		XXXXXXXXXX XXXXXXXXXX		XXXXXXXXXX XXXXXXXXXX	XXXXXXXXXXX XXXXXXXXXXX		
Machinery				XXXXXXXXXX XXXXXXXXXX			
Nursery plants					XXXXXXXXXXX XXXXXXXXXXX		

MAJOR AREA: CAREER OPPORTUNITIES IN AGRICULTURAL BUSINESSES

UNIT: OPPORTUNITIES IN AGRICULTURE

OBJECTIVES: To develop student understanding and appreciation of:

I. The importance of Agricultural Businesses.
II. The many opportunities that agricultural students may have in the business world.

SUGGESTED TEACHING TIME: 4 hours

SUGGESTED TEACHING TECHNIQUES:

I. Study questions and class discussion.
II. Talks by men in Agricultural businesses.
III. Individual reports by students.
IV. Overhead projector.
V. Films. (check your latest film list)

SUGGESTED ORDER OF PRESENTATION:

I. Review the list of agricultural occupations that have been studied

  A. Charts

II. What are some things to consider in studying job opportunities?

  A. Use overlay. (job demands, etc.)

III. Why are the opportunities in Agricultural occupations expanding so rapidly?

  A. 1965 --- 191 Million people in U.S.
  B. 1970 --- 222 Million. (Estimated)
  C. 1990 --- 273 Million. (Estimated)
  D. Use overlay showing stairsteps to emphasize.

IV. What is the basis for determining whether an occupation is agricultural or non-agricultural?

  A. Is a knowledge of agriculture important for success in the business?
  B. Is a farm background helpful?

V. Why is an agricultural background important in providing services for farmers?

  A. Talk their language.
  B. Know their problems.
  C. Able to anticipate their needs.
  D. Able to make logical suggestions.

VI. Select from 1 to 3 men in Agricultural businesses in your community and have them talk to students.

A. Discuss this with boys ahead of time.
B. Have boys prepared to ask questions.

VII. Have each student study one agricultural business opportunity and report to class.

A. Let students select their own.

VIII. Summarize the information for agricultural business opportunities.

A. Over 500 distinct vocations in agriculture.
B. Demands greater than qualified supply.
C. Agricultural vocations are interesting, varied, challenging, and financially rewarding.
D. Interest and abilities of a person are important in the selection of agricultural business as a career.

REFERENCES:

BOOKS

Guidance in Agricultural Education, Byram (Interstate).
* Handbook of Agricultural Occupations, Hoover, (Interstate).
Your Opportunities in Voc. Agri., Phipps (Interstate).

FILMS AND FILMSTRIPS

A Step Ahead: New Hollard Machinery. (Modern Talking).
Check your latest film and filmstrip catalogs.

CIRCULARS AND LEAFLETS

"I've found my Future--in Agriculture". (Nearest Land Grant College).
"Careers Ahead". (Nearest Land Grant College).
"Choose Your Career in Agriculture". (Hoards Dairyman).
U.S.D.A. Bulletins. (Consult your catalog).
State Extension Service Publications. (Check catalog).

* Suggested textbook for students.

MAJOR AREA: CAREER OPPORTUNITIES IN AGRICULTURAL BUSINESS

UNIT: PLANNING AN OCCUPATIONAL FUTURE

OBJECTIVE: To provide an opportunity for students to consider various careers in which they may be interested.

SUGGESTED TEACHING TIME: 5 hours

SUGGESTED TEACHING TECHNIQUES:

I. Show the two films: 16 mm film, "Dynamic Careers Through Agriculture," Extension Service, Classroom Bldg., Stillwater, Oklahoma; 16 mm film, "A Step Ahead," New Holland Machine Corporation, as an introduction to this unit.

II. Have each student organize and present to the class a career brief that provides the following information:

  A. Description and nature of the work.
  B.. Working conditions.
  C. Educational and personal qualifications.
  D. How to enter and advance in the occupation.

III. Have each member of the class spend one day on the job of an agribusiness of his choice.

  A. Observe working conditions, skills required, training required, working hours, fringe benefits, etc.
  B. Have students prepare a career brief from observations made on the job and present to the class.

EVALUATION:

I. Have students read and study occupational brochures.
II. Have each student organize and present to the class a career brief, including his reasons for choosing his particular occupation.
III. Have each member of the class spend one day on the job of an agribusiness.

REFERENCES:

Stone, Careers In Agribusiness and Industry.
Hoover, Handbook of Agricultural Occupations.
Agricultural Career Brochures.

Agricultural Education Department
Oklahoma State University

SUBJECT MATTER AND ASSOCIATED OCCUPATIONS

Cleo A. Dupy, Graduate Assistant

These suggestions for integrating occupational information and subject matter into one teaching unit will not be new to many teachers of vocational agriculture.

The purpose of the paper is to provide some suggestions on how teachers can teach occupational guidance information with their major subject matter material. The teacher of vocational agriculture in Oklahoma can no longer be thought of as only a teacher of production agriculture. As a higher percentage of our students go into occupations associated with agriculture, we must broaden our instruction to include training in these occupations.

The teaching of subject matter and its associated occupations seems to be one way of developing an interest in students who plan careers in the various fields that require an agricultural competency.

Objectives of This Method of Teaching

1. To show vocational agriculture students the occupational opportunities which may be open to and appropriate for them.
2. To acquaint the student with the broad fields of work that appear to fall within the orbits of his preferences, capacities, and opportunities.
3. To provide to students in vocational agriculture an understanding of the relationships among agricultural occupations, both farming and non-farming.

Subject Matter and Associated Occupations

The following outlines are examples of how to develop this method of teaching.

1. Develop this outline on the blackboard so students will clearly see the occupations and how they fit into the subject matter.

2. Suggest to students that they make a *choice of one or more* of the occupations and always think of that occupation in their learning process during this unit.
3. Encourage the student to become better acquainted with the occupation he chooses and allow the total class to benefit from his knowledge.
4. Develop a file on agricultural occupations information; have the students interview people who are working in the occupations of their interest; and as often as possible, speak about occupations when teaching a unit.

Benefits From this Method of Teaching

1. Students will become acquainted with agricultural occupations and, when asked by the guidance counselor what their plans are for the future, they will have had some occupational guidance and *may* have an answer.
2. Students should become more interested in their school work.
3. Teachers could use this method of stimulating students so that they will be ready for occupational training in later high school years.
4. The interest of the students may become such that teachers would want to start an occupational training program in their school by placing students in businesses for occupational training.

LIST OF PREFERRED REFERENCES, D.E. ORIENTED UNITS

BOOKS

Agricultural Occupations (The Interstate).

Future Farmers of American Supply Service, Agriculture is More Than Farming (P.O. Box 1180, Alexandria, Virginia), 15¢ each.

Haas and Perry, Sales Horizons (Prentice-Hall, Englewood Cliffs, N.J., Second Edition, 1963).

Who is Liable for Pupil Injuries: N.E.A. Research Division, Published by National Division of Safety.

Nolan and Warmke, Marketing, Sales Promotion, and Advertising.

Richert, Retailing Principles and Practices (McGraw-Hill Book Company, Fourth Edition, 1962).

Robinson and Haas, How to Establish and Operate a Retail Store (Prentice-Hall, Second Edition).

Robinson, O. Preston, William R. Blackler, and William B. Logan, Store Salesmanship (Prentice-Hall, Inc), Englewood Cliffs, N. J., Fifth Edition, 1959).

Rowse, Edward J., and Carroll A. Nolan, Fundamentals of Advertising (South-Western Publishing Company, Sixth Edition, 1957).

Shilt, Wilson, Business Principles and Management (South-Western).

Weyant, Hoover, McClay, Agricultural Business and Industry (The Interstate).

Wilson, Eyster, Consumer Economic Problems (South-Western Publishing Company, Sixth Edition, 1961).

Wingate, Gillespie, and Addison, Know Your Merchandise.

Wingate and Nolan, Fundamentals of Selling (South-Western).

Wingate and Weiner, Retail Merchandising (South-Western).

Exploring Careers in Modern Agriculture, Jimmie Wolf.

DIRECTLY RELATED CURRICULUM

Members of the 1966 Agricultural Occupations workshop, Oklahoma State University, divided the curriculum of the cooperative experience program into two major divisions. The first which related to agricultural distribution in all areas has already been presented and was designed to involve at least half of the class time each year for a two-year period. The following section of the institute report deals with the type of training directly related to agricultural knowledge required by the student trainee to perform tasks in his training station.

Interview-type surveys of employment needs in off-farm agricultural businesses have been made in 26 states. Nearly all of these surveys were conducted in 1964. There was considerable variation in the way the states conducted the studies and reported the findings. Much of the research is still in progress, and additional state publications will be issued. However, generalizations may be drawn from the findings of surveys available, and these are:

1. Almost half the people employed in off-farm agricultural businesses need education or training in agriculture.

2. Employers expect about a twenty per cent increase in the number of employees needing agricultural competencies in the next five years. This parallels the anticipated expansion in the total labor force,

3. Need for greatest numbers of agriculturally-trained employees will be in agricultural supplies sales and services, agricultural machinery sales and services, ornamental horticulture services, and livestock and crop food products marketing and distribution.

4. Agricultural competencies needed are mainly determined by the products handled by these businesses.

5. Many of the agricultural subjects taught to students preparing for production farming also will be needed by students who enter off-farm agricultural occupations.

6. Salesmanship, human relations, and business management are competencies needed by all employees, but in varying degrees.

7. Trainees with a farm background or farm experience have a definite advantage when seeking employment in off-farm agricultural businesses.

8. Occupational titles needing the greatest number of new employees, not including professional workers, in the next five years are:

   Agricultural Machinery Mechanic
   Agricultural Machinery Mechanic's Helper
   Agricultural Machinery Set-up Man
   Agricultural Machinery Partsman

Agricultural Supplies Salesman
Agricultural Supplies Serviceman
Agricultural Supplies Deliveryman

Greenhouse Grower
Greenhouse Worker
Nursery Worker
Greenskeeper
Groundskeeper

Food Products Processman
Food Products Salesman
Food Products Department Manager

In view of the findings of the various surveys conducted throughout the United States, the members of the 1966 Agricultural Occupations Workshop divided the directly related curriculum into three broad categories--Agricultural Supply, Horticulture, and Machinery. Suggested units of study were developed according to competencies needed in each of the major areas. The time limit recommended on this part of the curriculum for the cooperative experience program depends on the ability of the student to progress individually from one level of competency to another more difficult level.

AGRICULTURAL SUPPLY--SALES AND SERVICE

Ten members of the 1966 Agricultural Occupations Institute served as a planning committee for developing a suitable curriculum which could be taught to small groups of students employed in agricultural supply businesses or taught individually to students in this area in a two-year program. By checking with Dr. Stevenson's report, it seemed that the most essential areas of agricultural competencies involved the following sales fields:

Feeds

Crop, Lawn, and Garden Seeds

Fertilizers

Agricultural Chemicals

Petroleum and Petroleum Products

Miscellaneous Agricultural Supplies and Small Equipment
  Veterinary Supplies and Equipment
  Large Animal Supplies and Equipment
  Pet Supplies and Equipment
  Electrical Supplies
  Plumbing Supplies
  Nails, Screws, Bolts, Hinges
  Small Tools
  Batteries, Oils, Small Motors
  Lumber
  Builders' Supply and Equipment

Suggested units of study are presented in each of these major sales areas in the agricultural supply business. Some of the more common occupational titles associated with agricultural supply sales and services are: product salesman, store sales clerk, serviceman for store, feedmill, fertilizer plant, etc., foreman in mill or plant, feedmill operator, workers and managers in fertilizer plants. Committee members who developed the curriculum in the area of agricultural supply are:

Lawrence Venner, Chairman

Dwight Blankenship

Odel Miller

James Hunter

Mickey Nolen

W. D. Sumner

Finus Branham

Gerald Dawkins

W. G. Parker

Robert Wood

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: FEEDS

OBJECTIVE: To develop the understandings and abilities needed for employment and advancement in the feed industry

SUGGESTED TEACHING TECHNIQUES:

Class discussion
Field trips to agricultural feed and supply stores
Preparation of merchandise and information folder on feeds
Supervised study
Field trips to feed mill and feed manufacturing plant
Films and overhead projector

COMPETENCIES TO BE DEVELOPED:

I. Understanding the basic economics of livestock feeding

  A. The percent feed costs are of the total cost of livestock production
  B. The effect of the feeding program on rate of livestock production
  C. The effect of the feeding program on the quality of production
  D. Variation of the cost of different rations
  E. Effect on farmers' returns of excessive feeding, feeding wrong ration, or other improper feeding
  F. Relation of the success of the feed business in agricultural--supply stores to the success of livestock producers

II. To understand the different livestock feeds and their values

  A. Energy producers
  B. Protein supplements
  C. Vitamin and mineral supplements
  D. Premixes
  E. Feeds formulated for specific groups of animals such as lactating sows, baby chicks, etc.

III. An understanding of basic animal nutrition

  A. Feed ingredients that are of greatest importance
  B. Sources of ingredients
  C. Important uses
  D. Physical and chemical characteristics of ingredients
  E. Nutritive contents
  F. Cost of ingredients and things affecting it

IV. To develop the ability to formulate a grain ration for different kinds of livestock

  A. Primary need of specific groups of animals--examples; large amount of high-energy low-cost feed for finishing steers; small amount of very high-quality supplement for baby pigs

B. Identify characteristics of different classes of feed--corn or sorghum; very high energy, palatable, and economical ingredients--baby pig premix; high-quality animal source protein, mineral, vitamin, and antibiotic supplement

V. An understanding of the different methods used to prepare feeds

A. Forms of ingredients--whole grain, cracked, crushed, meal, etc.
B. Methods of reducing particle sizes
C. Ways of combining ingredients
D. Final physical characteristics of feeds

VI. An understanding of the methods used and trends in merchandising feeds

A. Bulk handling procedures (conveyors--screw, pneumatic, etc.)
B. Mill to farm service or mill to automatic feeder
C. Use of premixes
D. Formulating rations using farmer-owned grains--using portable mills or farm grain brought to mill
E. Providing related services
F. Increase in outside selling
G. Contract feeding of various kinds of livestock
H. Other new developments--check with cooperating stores

VII. To understand the regulations governing the formulating, labeling and using of feeds

A. Interpretation of feed tags
B. Open and closed formula feeds
C. Nutrituve guarantees required on commercially prepared feeds
D. Food and drug regulations

VIII. An understanding of the use of additives in feed

A. Purposes for which used
B. Classes of livestock to which they are important
C. Methods of putting additives in feeds
D. Regulations

REFERENCES:

*Morrison, F. B. Feeds and Feeding, 9th Edition, Abridged
Cossard, D. W. Approved Practices in Feeds and Feeding
Course of Study in Non-Farm Agricultural Occupations. Department of Agriculture Education, Lexington, Kentucky.
Handbook of Agriculture Occupations. Hoover.
Agribusiness and Industry. Archie A. Stone.
A Study of Employment Opportunities and Training Needs in Off-Farm Agricultural Occupations in Oklahoma. William W. Stevenson.
Farm Agricultural Occupations in Oklahoma. William W. Stevenson.
The United States Department of Agriculture Yearbook, 1954.
**Feeds, Sales and Service. Module No. 7, Ohio State University.
Doane's Farm Management Guide. St. Louis, Missouri.
The Stockman's Handbook. Ensminger.

*Indicates best reference

**Recommended as a supplement to be used by individual students--can be ordered in quantities for a small fee. Write for The Agricultural Supply-Sales and Service Occupations manual Module No. 7, Ohio State University, Columbus, Ohio.

Films:

"Feeding Farm Animals"--19 Minutes--Deals with the six basic feed nutrients and how animals use them

"The Rumin Story"--24 Minutes--Deals with the process of digestion in ruminants

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: CROP, LAWN, AND GARDEN SEEDS

OBJECTIVE: To develop the effective ability to purchase seed wisely, and to work effectively as a salesperson in an agricultural-supply store selling seed.

SUGGESTED TEACHING TECHNIQUES:

I. Field trip to seed analyist, if possible.
II. Field trip to a certified seed processor.
III. Use of seed tags in class.
IV. Use of charts for varieties.
V. Student demonstrations--show what they have learned.
VI. Student role playing.
VII. Seed samples.
VIII. Field trip to observe selling of seed.

COMPETENCIES TO BE DEVELOPED:

I. Understand the importance of quality seed in the production of crops.

   A. Characteristics of good seed: (1) clean, (2) disease free, (3) viable, (4) well developed, (5) good heritage, and (6) adapted for seasons--annual, biennial, perennial.
   B. Effect of each of the above characteristics on crop production.
   C. Cost of good seed relative to the total value of the crop. Good seed costs you less.

      1. $\frac{\text{Price per hundred}}{\text{Purity X germination}} = \text{Price per 100 lbs. of live seed}$
      2. Show the difference in costs of seed (good & bargain).

   D. Importance of adapted varieties of seed in securing good production.
   E. Per cent of crop production cost allocated to seed.

II. Understand how quality seeds are produced.

   A. How seeds are formed.
   B. The role of the plant breeder, foundation seed producer, and the registered or certified seed producer.
   C. The role of the Seed Improvement Association

III. Understand how quality is controlled and regulated in the seed industry.

   A. The seed law (Use your state seed law.)
   B. Seed label requirements
   C. Information included on the seed tag. (You can use samples of different seed tags and crops.)
   D. Tagging seed for resale.
   E. Rules for taking samples of seed for analysis.

IV. Understand physical problems involved in marketing seed.

   A. Storage of seed to prevent damage from vermin and weather.
   B. Prevention of damage to containers in handling.
   C. Labor saving practices in handling seed.
   D. Prevention of contamination or mistaken identity of seed in handling, particularly in broken lots.
   E. Loss or waste due to spillage or broken containers.

V. Know kinds and varieties of seeds.

   A. Be able to identify by physical appearance the various kinds of seeds commonly sold in local stores.
   B. Know the names of varieties of plants or crops generally recommended or requested on the local market.
   C. Know some of the desirable characteristics of recommended varieties.

VI. Know mixtures of seed locally recommended for various purposes.

   A. Cover-crop mixtures.
   B. Pasture mixtures.
   C. Lawn mixtures.
   D. Hay-crop mixtures.
   E. Seed mixtures and seeding rates approved under ACP practices.

VII. Know season and seeding dates for plants for local conditions.

   A. Field crops.
   B. Vegetable and garden plants.
   C. Lawn plants.

VIII. Know weights and measures of seeds.

   A. Weight per bushel, pint, bag or other volume container by which the particular seed is sold.
   B. Test-weight of seed and its relation to quality and sales.
   C. Standard packaging of seed handled locally.

IX. Understand chemical or biological treatments given or needed by various seeds.

   A. Innoculation of legume seed.
   B. Chemical treatment for insects and fungi control.
   C. The effect of seed treatment on use for feed or food.

X. Know the fertility and cultural needs for seeds commonly sold.

   A. Lime and fertilizer needs for common crops.
   B. Proper degree of seed-bed preparation for good seed germination.
   C. Rates of seeding for various plants.
   D. Depth of covering seed.

XI. Know the services offered by the company

REFERENCES:

1961 YEARBOOK OF AGRICULTURE--SEEDS; U. S. Department of Agriculture;
FIELD CROPS; Fergus and Hammonds, (J. B. Lippencott Co., Inc., Chicago, 19[illegible];
PR[illegible]ING FARM CROPS; Wilson and Richer, (The Interstate, Danville, Illinois, 1960);
COURSE OF STUDY IN NONFARM AGRICULTURAL OCCUPATIONS; Department of Agricultural Education, (University of Kentucky, Lexington);
CROP, LAWN, AND GARDEN SEEDS, SALES AND SERVICE; Module No. 8; The Center for Research and Leadership Development in Vocational and Technical Education, (The Ohio State University, Columbus, Ohio).

Figure 1

CHART

TEACHING SEED VARIETIES

CROP	VARIETY	PLANTING DATE	RATE	SEASON	FACTS ABOUT THE VARIETY

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: FERTILIZERS

OBJECTIVE: To provide the student with the necessary background and agricultural competencies needed for a career in fertilizer sales and services.

SUGGESTED TEACHING TECHNIQUES:

I. Demonstrations
II. Visual aids--films, posters, slides, charts, fertilizer bags, analysis tags, soil test reports, etc.
III. Field trips and tours
IV. Individual study and instruction
V. Research and experiments
VI. Resource persons
VII. Test plots
VIII. Laboratory work
IX. Problem solving
X. Role playing

COMPETENCIES TO BE DEVELOPED:

I. First Year:

  A. An understanding and appreciation of the value and importance of fertilizer to the prospective user.
  B. To understand the principles of plant growth and how it relates to the availability of plant nutrients and other conditions.
  C. To understand how fertilization is affected by basic physical, chemical, and biological properties of soils.
  D. Familiarity with the crops grown in the community and their nutritive requirements.
  E. An understanding of how soil deficiencies are determined and corrected.
  F. An understanding of the characteristics of fertilizer materials and how to interpret formulas.

II. Second Year:

  A. How to interpret soil tests and make recommendations.
  B. To understand how to advise customers about selection, calibration and maintenance of fertilizer equipment.
  C. To understand the basic principles of fertilizer manufacture and plant operations.
  D. How to merchandise fertilizers effectively.

    1. Buying and selling
    2. Storage and handling
    3. Pricing and advertising

  E. An understanding of future trends and new developments in the fertilizer business.

INSTRUCTIONAL MATERIALS AND REFERENCES

1. Knuti, L. L., et al. Profitable Soil Management. Englewood Cliffs, New Jersey. Prentice-Hall, Inc., 1962.
2. McVickar, M. H. Using Commercial Fertilizers. Danville, Illinois: The Interstate Printers and Publishers, 1961.
3. Dictionary of Plant Foods. Philadelphia: Farm Chemicals, Ware Bros. Co., 217 N. Broad Street. 51 pages.
4. How to Get Good Soil Samples. Washington, D. C.: American Potash Institute, Inc., 1102 Street, N. W.
5. Methods of Applying Fertilizer. 20 pages. Price $10.00.
6. Our Land and It's Care. Fourth Edition. Washington, D. C.: National Plant Food Institute, 1700 K Street N. W., 20006, 1962. 72 pages.
7. The Fertilizer Handbook. Washington, D. C.: National Plant Institute, 1700 K Street, N. W., 20006, 1963.
8. Miller, C. E., and Turk, L. M., Fundamentals of Soil Science. John Wiley and Sons, Inc., New York, 1946.
9. Weir, W. W., Productive Soils, J. B. Lippincott Company, New York, New York, 1946.
10. Gustafson, A. F., Using and Managing Soils. McGraw-Hill Book Company, Inc., New York.
11. Methods of Applying Fertilizers. Circular 613, Oklahoma State University Extension Service, Stillwater, Oklahoma.
12. Know Your Fertilizers. Circular 635, Oklahoma State University Extension Service, Stillwater, Oklahoma.
13. Using Commercial Fertilizer in Your Home Garden. Circular No. 627, Oklahoma State University Extension Service, Stillwater, Oklahoma.
14. Our Soil and Its Care. Circular 638, Oklahoma State University Extension Service, Stillwater, Oklahoma.
15. A Soil Improvement Program for Oklahoma. Circular No. 412, Oklahoma State University Extension Service, Stillwater, Oklahoma.

VISUAL AIDS

1. How Soil pH Affects Availability of Plant Nutrients. (Poster) National Plant Food Institute, 1700 K Street, Washington, D. C. 20006.
2. How to Take a Soil Sample. (10 - 35mm. 2" x 2" colored slides) National Plant Food Institute, 1700 K Street, Washington, D. C., 20006. Price $2.50.
3. Hunger Signs in Crops. Washington, D. C.: American Society of Agronomy and the National Fertilizer Assoc.
4. Lime Means More Money for You. (Poster) National Plant Food Institute, 1700 K Street, Washington, D. C., 20006. Free.
5. Making the Most of a Miracle. (27 min. color film) National Plant Food Institute, 1700 K Street, Washington, D. C. 20006. Free.
6. Nutrient - Deficiency Symptoms in Plants. (35mm. 2" x 2" colored slides) National Plant Food Institute, 1700 K Street, Washington, D. C., 20006. 25¢ each.
7. Soils, Plant Nutrition, and Fertilizers. (64 - 35mm. 2" x 2" colored slides) National Plant Food Institute, 1700 K Street, Washington, D. C., 20006. Price $16.00.
8. The Big Test. (15 minutes, color) National Plant Food Institute, 1700 K Street, Washington, D. C., 20006. Free.
9. The Land's Legacy and Promise. (27 minutes, color) National Plant Food Institute, 1700 K Street, Washington, D. C., 20006. Free.

10. Weather or Not. (22 minutes, color) National Plant Food Institute, 1700 K Street, Washington, D. C., 20006. Free.
11. Whats in the Bag. (17 minutes, color) National Plant Food Institute, 1700 K Street, Washington, D. C., 20006. Free.
12. Profit in Forage Pasture. (29 colored slides). National Plant Food Institute, 1700 K Street, Washington, D. C.

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: AGRICULTURAL CHEMICALS

OBJECTIVE: To develop understandings and abilities needed to use and render service to farmers (and others) in recommending and using agricultural chemicals.

SUGGESTED TEACHING TECHNIQUES:

I. Supervised study and discussion
II. Overhead projector
III. Original charts and collections
IV. Films and film strips
V. Resource personnel

COMPETENCIES TO BE DEVELOPED:

I. Importance of using agricultural chemicals in modern farming.
II. Identification of various pests in your area and the damage done by each.
III. Recommending the correct pesticide. (Within the framework of the label).
IV. Recommending the correct application of pesticides. (Within the framework of the label).
V. Safe handling, storage, and use of agricultural chemicals.
VI. Understanding information on labels and other literature.
VII. Merchandising agricultural chemicals.

REFERENCES:

I. Books:

Krebs, A. H. Agriculture in Our Lives. The Interstate Printers and Publishers (text).
Agricultural Chemicals-What They Are-How They Are Used. Manufacturing Chemists' Association, Inc., 1825 Conn. Avenue, N. W., Washington, D. C., (text).
Farm Chemical Handbook. Meister Publishing Co., 37841 Euclid Avenue Willoughby, Ohio, (reference).
Frear, D.E.H. Pesticide Handbook - Entoma. College Science Publishers, State College, Pennsylvania. (reference).
Klingman, G. C. Weed Control: As A Science. John Wiley and Sons, Inc., 400 4th Avenue, New York (text).
Schneider, G. W. and Scarborough, C. C. Fruit Growing. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. (reference).
U.S.D.A. Yearbooks
Ensminger, Animal Science. The Interstate. (reference).

II. Bulletins:

Oklahoma Extension Circular 760, Safe and effective chemical weed control.
Oklahoma Extension Circular 763, 1965 guide to safe and effective chemical weed control.
Oklahoma Extension Circular 750, Internal parasites of cattle.
Oklahoma Extension Fact Sheet 7450, Pesticides can be used safely.
Oklahoma Extension Fact Sheet 7454, Check your pesticide labels.
Oklahoma Extension Fact Sheet 7456, Laws governing safe use of chemicals.
Oklahoma Extension Fact Sheet 7306, Ornamental insect control.

Up to date state bulletins on pests, pesticides, and chemicals.

III. Useful advertising material:

Globe Blue Book-Animal Health. Anchor Serum Company.
Animal Health Guides, Published by various companies. (check with local dealers).

IV. Filmstrips:

"Points about pesticides", and "Facts about pesticides." Manufacturing Chemists' Association, Inc.

V. Movies:

"Safe use of pesticides", color, 1963, 16 mm., 21 minutes, U.S.D.A. order from your state film library.

VI. Modules:

Agricultural Chemicals Sales and Service. Module No. 10, Ohio State University, 980 Kinnear Road, Columbus, Ohio, 43212.

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: PETROLEUM AND PETROLEUM PRODUCTS

OBJECTIVES: To train students in the proper handling and usage of petroleum products.

SUGGESTED TEACHING TECHNIQUES:

I. Field trips.
II. Resource persons.
III. Classroom displays.
IV. Test and exams.
V. Outside reading and assignments.
VI. Labs--use of oil testers.
VII. Charts.

COMPETENCIES TO BE DEVELOPED:

I. Selecting proper fuels.
II. Proper storage for fuels.
III. Choosing proper oils.
IV. Selecting proper lubricating greases.
V. Selecting the proper hydraulic oils.
VI. Selecting, delivery and storage or heating oils.
VII. Understanding safety laws pertaining to delivery and storage.
VIII. Care of delivery truck--service and operating.
IX. How to secure a chauffeur's license.
X. How to make out a sales ticket.

TEACHING AIDS:

I. "Tank Truck Fires," 16 mm sound color film - 15 minutes. American Petroleum Institute, 1271 Avenue of the Americans, New York, New York.
II. "Selecting and Storing Tractor Fuels and Lubricants," color filmstrip, Southern Association of Agricultural Engineering and Vocational Agriculture, Athens, Georgia.
III. Films and filmstrips from major oil companies.
IV. Copies of forms used by local dealers:

    A. Credit cards.
    B. Driver delivery book.
    C. Sales tickets.
    D. Daily sales summaries.
    E. Tax exemption forms.

REFERENCES:

I. The following publications may be ordered from the American Petroleum Institute, 1271 Avenue of Americans, New York 20, New York.

    A. Accident Prevention Manual No. 13, Cleaning Mobile Tanks Used for Transportation of Flammable Liquids.
    B. Bulletin 1609, Drivers Handbook, 1960.
    C. Bulletin 1616, Petroleum Delivery Truck Operation and Maintenance.

- D. Publication 1609, Driver's Handbook, 1960, price 30¢.
- E. Publication 1526, A Future for You in Petroleum Marketing, 1965.
- F. Publication 1950, Know Your Oil, price 25¢.
- G. Publication 1615, Installation of Underground Gasoline Storage Tanks and Piping at Service Stations.

II. The ABC's of Lubrication, Ashland Oil and Refining Company, Ashland, Kentucky.

III. Lubricating Oil Classifications, Technical Notes Series, The Ethyl Corporation of American, New York 20, New York.

IV. Sauter, N. A. Modern Farm Machines Need Modern Greases, American Engineering Journal, January 1956 - Reprints available.

V. Selecting and Storing Tractor Fuels and Lubricants, Southern Association of Agricultural Engineering and Vocational Agriculture, Athens, Georgia, 1964, price $1.25.

VI. Storage and Handling of Liquified Petroleum Gases, 1965 NFPA, No. 58, National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. 02110.

VII, Rules and Regulations for Storage and Transportation of Liquid Petroleum, available from the State Fire Marshal's Office for respective states.

VIII. Farm Tractor Maintenance. Brown and Morrison, The Interstate, Danville, Illinois.

IX. Selecting and Storing Tractor Fuels and Lubricants. Agricultural Engineering Building, Athens, Georgia, price $1.25 per copy.

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: VETERINARY, LARGE ANIMAL, POULTRY, AND PET SUPPLIES, AND EQUIPMENT

OBJECTIVES:

I. Develop familiarity with the wide range of supplies which may be carried by the Agricultural Supply Business.
II. Develop knowledge of specific characteristics of selected miscellaneous equipment useful to a salesperson.
III. Develop knowledge of what services can be provided with miscellaneous supplies handled by an Agricultural Supply Business.

SUGGESTED TEACHING TECHNIQUES:

I. Bring in several small "miscellaneous" items and have the students to identify them and tell what they are used for.
II. Supervised study.
III. Use a veterinarian to demonstrate supplies and equipment.

COMPETENCIES TO BE DEVELOPED:

I. Types of plastic syringes that are reusable.
II. Types of syringes that can be sterilized.
III. Gauges of syringe needles.
IV. Difference between hypodermic syringes and dose syringes.
V. Information for customer sterilization of veterinary equipment.
VI. Size balling gun used for horses, cattle, swine, or sheep.
VII. Age at which to use different types of dehorners.
VIII. Using dehorning paste.
IX. Types of grooming tools and deodorants.
X. Types of feeders and waterers.
XI. Parasite control medicines.
XII. Thermometers for animals.
XIII. Continuous-flow stomach pumps.
XIV. Types of chemicals that might be used on dairy cows.
XV. Veterinary products that need to be refrigerated.
XVI. Products having expiration dates.
XVII. Medications that are fast action or slow action.
XVIII. Supplies used to identify animals.
XIX. All types of milking supplies and equipment.
XX. All types of poultry and egg supplies and equipment.

TEACHING AIDS:

I. Instructional materials

    A. Catalogs - Nasco, Sears, Franklin, and others.
    B. Brochures and trade magazines available from major manufacturers of the different products.

REFERENCES:

I. Logan, William and Moon, Helen M., Facts About Merchandise, pp. 173-198.
II. Robinson, O., Blacker, W. L., Logan, William B., Store Salesmanship, pp. 235-250.

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: ELECTRICAL SUPPLIES

OBJECTIVES:

I. To become familiar with all electrical equipment and supplies handled in a local hardware or supply store.
II. To learn the many sizes and kinds of electrical wire and uses to each.
III. To understand common electrical terms.
IV. To follow safety precautions in working with electrical equipment.

SUGGESTED TEACHING TECHNIQUES:

I. Collect samples of each size and kind of electrical wire sold.
II. Using textbook look up assignment.
III. Visit hardware and electrical supply store and observe and list all electrical equipment available.
IV. Filmstrips and 16 mm films on electricity.

COMPETENCIES TO BE DEVELOPED:

I. Define meter, service entrance switch, fuse, switch, outlet box, junction box, receptacle outlet, conduit, armored cable, nonmetallic cable, convenience outlet, porcelain receptacle, toggle switch, tumbler switch, light sockets, outlet plugs, electrical tape, surface outlet.
II. The common sizes of electrical wire.
III. Various kinds of electrical wire and uses of each.
IV. Tools used in wiring.
V. Important standards of the National Electrical Code.
VI. Important safety precautions in electricity.
VII. Read and explain the nameplate on electrical appliances.

REFERENCES:

Phipps, McColly, Scranton, and Cook. *Farm Mechanics Text and Handbook*. Fourth Printing. Danville, Illinois: The Interstate Printers and Publishers, 1962.
Simplified Handbook on Wiring. Sears and Roebucks.

TEACHING AIDS:

I. Samples of electrical wire and equipment.
II. Charts and catalogs.

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: PLUMBING SUPPLIES

OBJECTIVES:

I. To provide knowledge which will enable students to serve customers who call for a specific fitting.
II. To teach students to identify all sizes and types of fittings and uses of each.
III. To teach students the various kinds and sizes of pipe and uses of each.

SUGGESTED TEACHING TECHNIQUES:

I. Filmstrips and visual aids.
II. Visit local plumbing supply house and observe various sizes and assortments of fittings and pipe.
III. Learn to identify various sizes and kinds of fittings and pipe.

COMPETENCIES TO BE DEVELOPED:

I. Define plumbing, fitting, fixture, trap, sewer, soil pipe, vent stack, union, nipple, bushing, plug, cap, coupling, 90° elbow, 45° elbow, straight tee, street elbow, straight cross.
II. Name essential pipe fitting tools and identify.
III. Common kinds of pipe and uses of each.
IV. Advantages and disadvantages of plastic pipe.
V. Marking and measuring pipe.
VI. Cutting and threading pipe.
VII. Faucet repair.
VIII. Name and identify common sizes of pipe and fittings.

REFERENCE:

Phipps, McColly, Scranton, and Cook. Farm Mechanics Text and Handbook. Fourth Printing. Danville, Illinois: The Interstate Printers and Publishers, 1962.

TEACHING AIDS:

Samples of every fitting and each kind of pipe.

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: NAILS, SCREWS, BOLTS, HINGES

OBJECTIVES:

I. To provide a learning situation which will enable a student to be able to identify the various sizes and types of nails, screws, bolts, and hinges.
II. To familiarize the students with the problems they will encounter in merchandising the supplies.

SUGGESTED TEACHING TECHNIQUES:

I. Observe a salesman who is selling these supplies.
II. Learn to identify every size and type of nail, screw, bolt, and hinge.
III. Using samples have students act as customer and salesman.
IV. Filmstrips and company charts on identification of above.

COMPETENCIES TO BE DEVELOPED:

I. List important factors in choosing hardware.
II. List types of nails and uses of each.
III. List types of screws and uses of each.
IV. List types of bolts and uses of each.
V. List types of hinges and uses of each.
VI. List some other types of hardware or fasteners handled in most hardwares.
VII. Purposes, types and uses of glue.

REFERENCE:

Phipps, McColly, Scranton, and Cook. *Farm Mechanics Text and Handbook*. Fourth Printing. Danville, Illinois: The Interstate Printers and Publishers, 1962.

TEACHING AIDS:

Samples of every size and kind of nail; screw, bolt, and hinge.

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: SMALL TOOLS

OBJECTIVES:

I. To provide experience which will enable students to identify various small tools and know the uses of each.
II. To teach students to recognize the various grades and values of small tools.

SUGGESTED TEACHING TECHNIQUES:

I. Study small tool catalogs and textbooks and list the various types of small tools handled in hardware businesses.
II. List the uses of the tools.
III. Visit a business that handles small tools and observe their display.
IV. Filmstrips on identification and uses of small tools.

COMPETENCIES TO BE DEVELOPED:

I. The three common types of planes and uses of each.
II. Name common kinds of squares and their uses.
III. Various kinds of rules.
IV. Kinds and uses of chalk lines.
V. Kinds of saws and their uses.
VI. Difference in 8 and 10 point saws.
VII. Sizes and kinds of wood chisels.
VIII. Sizes and uses of the drawknife
IX. Types and use of wood rasps.
X. Types of braces.
XI. Sizes and types of drill bits.
XII. Types, sizes, and grades of claw hammers.
XIII. Types, sizes, and grades of ball peen hammers.
XIV. Nail sets and uses.
XV. Types and uses of screw drivers.
XVI. Types and uses of clamps.
XVII. Types and uses of levels.
XVIII. Three types, sizes, and uses of fixed jaw wrenches.
XIX. Sizes and uses of adjustable wrenches.
XX. Types and weights of vises.
XXI. Types and uses of files.
XXII. Types and uses of punches.
XXIII. Types and uses of cold chisels.
XXIV. Types of measuring tools.
XXV. Types and uses of power saws.

REFERENCE:

Phipps, McColly, Scranton, and Cook. Farm Mechanics Text and Hankbook. Fourth Printing. Danville, Illinois: The Interstate Printers and Publishers, 1962.

TEACHING AID:

Various small tool catalogs.

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: MISCELLANEOUS -- BATTERIES, OILS, AND SMALL MOTORS

OBJECTIVES:

I. To become familiar with the wide range of supplies and small equipment which may be carried by the agricultural supply business.
II. To know specific characteristics of selected miscellaneous small equipment and supplies useful to a salesperson.
III. To know what services can be provided pertaining to miscellaneous supplies and small equipment handled by supply business.

SUGGESTED TEACHING TECHNIQUES:

I. Classroom discussions
II. Catalogs
III. Resource personnel
IV. Visit battery manufacturer

COMPETENCIES TO BE DEVELOPED:

I. To know the various makes, models, sizes, and adaptability of air-cool motors.
II. To become familiar with the operation, and service that can be offered for various small engines.
III. To learn the safety procedures in handling and using miscellaneous supplies.
IV. Learning the various models of engines and accessories.

    A. Two-cycle
    B. Four-cycle
    C. Aluminum block
    D. Castiron block

V. Horsepower ratings
VI. Vertical shaft
VII. Horizontal shaft
VIII. Equipment powered by gasoline engines

    A. Chain saws
    B. Steam cleaners
    C. High-pressure washers
    D. Post-hole diggers
    E. Feed mills
    F. Water pumps
    G. Elevators
    H. Sprayers
    I. Generators
    J. Garden tillers
    K. Weed cutters
    L. Lawnmowers
    M. Saws
    N. Compost shredder
    O. Garden tractor

IX. Main engine components
X. Air, fuel and exhaust system components
XI. Ignition system components
XII. Governors
XIII. Cooling systems
XIV. Small-engine equipment and accessories
XV. Importance of buying small quantity of gasoline at a time
XVI. Importance of service manual
XVII. Safety instruction
XVIII. Storage room arrangement
XIX. Arrangement in show room
XX. Storage crates, boxes, etc.
XXI. Arrangement of service tools
XXII. Demonstration space
XXIII. Proper ventilation
XXIV. Fuel storage facilities
XXV. Fuel storage and servicing center
XXVI. Proper working condition of all tools and equipment
XXVII. Prior service of demonstration equipment
XXVIII. Lifting and handling of merchandise
XXIX. Shop color dynamics
XXX. Type of dress as a safety precaution
XXXI. Liability laws
XXXII. Insurance coverage
XXXIII. Care of bystanders
XXXIV. Belts and power shields
XXXV. First aid instructions
XXXVI. Procedure if accidnet does occur

MAJOR AREA: AGRICULTURAL SUPPLY

UNIT: BUILDING MATERIALS

OBJECTIVES:

I. To provide training which will enable students to become familiar with common building materials.
II. To teach students to work problems related to the building trade.

SUGGESTED TEACHING TECHNIQUES:

I. Classroom study and discussion.
II. Visit businesses handling building materials.
III. Work problems relating to roofing, concrete, bricking and other jobs
IV. Use overhead projector and opaque projector in presenting material

COMPETENCIES TO BE DEVELOPED:

I. Common building materials based upon construction of most buildings
II. Advantages of pole type buildings
III. How treated poles are sized and sold
IV. Types of roofing materials
V. How roofing materials are priced
VI. Weights, widths, and length of galvanized roofing
VII. Importance of zinc coating thickness on galvanized roofing
VIII. Various weights and types of asphalt shingles
IX. Number of feet per square
X. Special nails for different types of roofing materials
XI. Pounds of nails needed per square of roofing
XII. Importance of wood preservatives and where they should be used
XIII. Types and uses of plywood
XIV. Uses of masonite, wall paneling, celotex, sheetrock acoustical tile, etc.
XV. Sizes and types of outside and inside doors
XVI. Types and sizes of windows
XVII. Size of rough openings required for various windows
XVIII. Different types of floors and floor coverings
XIX. Different types of moldings and their uses
XX. Types of window and door trim
XXI. Advantages of using brick
XXII. Number of brick required per square feet
XXIII. How bricks are priced
XXIV. Advantages of using concrete blocks
XXV. Types and sizes of concrete blocks
XXVI. Pounds of cement per bag
XXVII. Define concrete, cement, and mortar
XXVIII. Number of cu. ft. per bag of portland
XXIX. How concrete is priced and how the amount needed is calculated
XXX. Number of sacks of cement needed per yard
XXXI. Ratio of cement, sand, and aggregate for concrete
XXXII. Ratio of cement to sand for mortar
XXXIII. How to figure yards of concrete needed for various jobs

REFERENCES: Farm Mechanics textbooks

MAJOR AREA: SALES AND SERVICES

UNIT: LUMBER

OBJECTIVES:

I. To provide a background that will help students better serve customers purchasing lumber.
II. To teach students how to figure lumber bills.
III. *To help students recognize the various grades of lumber.*
IV. To help students in recommending a grade and type of lumber.

SUGGESTED TEACHING TECHNIQUES:

I. Classroom study and discussion
II. Films
III. Use samples of different grades and kinds of lumber
IV. Make field trips to local lumber yards

COMPETENCIES TO BE DEVELOPED:

I. A knowledge of running feet, board feet, S1S, S2S, and S4S
II. How lumber is sized
III. Unit measure in selling lumber
IV. Amount allowed for waste
V. How to calculate board feet
VI. How to calculate the cost of lumber at different cost per thousand
VII. How molding is sold
VIII. Requirements of good lumber
IX. Kinds of timber used for lumber and the strength of each
X. Common grades of lumber
XI. Proper techniques in storing lumber

REFERENCES

I. Shopwork on the Farm by Jones
II. Commerical materials
III. Louisiana Manual

MAJOR AREA: SALES AND SERVICES

UNIT: FENCING

OBJECTIVES:

I. To help students recognize the suitability of different types of fences for a given purpose.
II. To show the differences in the various types of fencing materials.

SUGGESTED TEACHING TECHNIQUES:

I. Work problems relating to fencing
II. Visit store handling fencing materials
III. Show films on building fences

COMPETENCIES TO BE DEVELOPED:

I. Types of fencing materials on the market and the uses of each
II. Styles of woven wire
III. Heights of woven wire
IV. The size and gauge of wire
V. Uses of barbed wire
VI. Amounts of barbed wire per spool
VII. Amounts of woven wire per spool
VIII. Number of barbs and their spacing on barbed wire
IX. Different types and sizes of post
X. Advantages and disadvantages of different types of post
XI. Different kinds of fasteners used in fencing
XII. How to build corners
XIII. Types of decorative yard fencing
XIV. How to figure a bill on a list of materials needed to construct a certain type of fence for a given distance
XV. Advantages of electric fencing

REFERENCES:

I. Farm catalogs
II. U.S.D.A. Bulletins
III. Commercial literature
IV. Louisiana Manual

MAJOR AREA: SALES AND SERVICES

UNIT: PAINTS

OBJECTIVES:

I. To help students understand the difference in paints on the market.
II. To provide a basic knowledge of paints and their uses.

SUGGESTED TEACHING TECHNIQUES:

I. Classroom study and discussion
II. Visit paint stores or bring in different types of paint
III. Use films
IV. Use overhead projector and opaque projector in classroom presentation

COMPETENCIES TO BE DEVELOPED:

I. Define pigment, durability, scaling, blistering, peeling
II. Name the different kinds of paints and their uses
III. Importance in selecting paint
IV. How many square feet a gallon of paint will cover
V. Number of coats required for a given job
VI. Importance in mixing paint
VII. Storing Paint
VIII. Brush selection
IX. Priming surfaces
X. Paint thinners
XI. Removing old paints
XII. Painting metals

REFERENCES:

I. Shopwork on the Farm By Jones
II. Commercial catalogs and materials
III. Louisiana Manual

BIBLIOGRAPHY, AGRICULTURAL SUPPLY

BOOKS

1. American Potash Institute, Inc., *How to Get Good Soil Samples*, 1102 Street, N. W., Washington, D. C.

2. Brown and Morrison, *Farm Tractor Maintenance* (The Interstate, Danville, Illinois).

3. Fergus and Hammonds, *Field Crops* (J. B. Lippencott Co., Inc., Chicago, 1958).

4. Gustafson, A. F., *Using and Managing Soils* (McGraw-Hill Book Company, New York).

5. Jones, *Shopwork on the Farm.*

6. Klingman, G. C., *Weed Control: As A Science* (John Wiley and Sons, Inc., 440 4th Avenue, New York).

7. Krebs, A. H., *Agriculture in Our Lives* (The Interstate Printers and Publishers).

8. Logan, William; and Moon, Helen M., *Facts About Merchandise*.

9. McVickar, M. H., *Using and Managing Soils* (McGraw-Hill Book Company, New York).

10. Manufacturing Chemists' Association, Inc., *Agricultural Chemicals--What They Are: How They Are Used*. 1825 Connecticut Avenue, N. W., Washington, D. C.

11. Morrison, F. B., *Feeds and Feeding* (Ninth Edition, Abridged).

12. Phipps, McColly, Scranton, and Cook, *Farm Mechanics Text and Handbook* (The Interstate, Fourth Printing, 1962).

13. Robinson, O.; Blackler, W. L., Logan, William B., *Store Salesmanship*.

14. *Rules and Regulations for Storage and Transportation of Liquid Petroleum,* available from the State Fire Marshal's Office for respective states.

MODULES AND CIRCULARS

1. Module No. 7, Ohio State University, *Feeds, Sales and Services* (recommended as a supplement to be used by individual student; can be ordered in quantities for a small fee.)

2. Module No. 8, *Crop, Lawn, and Garden Seeds, Sales and Service,* Ohio State University, Columbus, Ohio.

3. Module No. 10, Agricultural Chemicals Sales and Services, Ohio State University, 980 Kinnear Road, Columbus, Ohio, 43212.

4. Circular 635, Know Your Fertilizers, O.S.U. Extension Service, Stillwater, Oklahoma.

AGRICULTURAL MACHINERY

Another committee of ten 1966 Agricultural Occupations Institute members who were particularly interested in the area of farm machinery developed a curriculum which they felt would be applicable to the cooperative agriculture student employed in a farm equipment business. These men felt that the most effective method of devising such a curriculum would be to divide responsibility between the coordinator in the classroom and the type of instruction which the boy could be expected to receive at his training station. They also felt that the best way to develop the boy to insure satisfactory progress on the job would be to divide the levels of learning from the simplest type of employment in the farm equipment to the most difficult, allowing the boy to progress both in the classroom and at his training station according to his ability. For that reason the suggested curriculum for farm machinery employees has been divided as follows:

Utility Man

Set-up and Delivery Man

Mechanic's Helper

Mechanic

Shop Foreman and Assistant Shop Foreman

The Parts Man

Sales Trainee and Salesman

At the end of this major area of instruction is a sample lesson plan, devised by one of the committee members, as a suggestion as to how a teacher-coordinator could go about working with a student trainee in his classroom. He selected the employment as machinery mechanic's helper as the unit he would explore from a teaching standpoint. The other units are divided only as to levels of competencies with suggested references from which the teacher can develop his own course of study. This for the mechanic's helper is only a suggestion.

Committee members involved in the development of the over-all curriculum for agricultural students employed in farm machinery businesses were:

Ed Perry, Chairman

George Dowell

Robert Crawley

Bill Corning

Hallard Randell

Arlie Goforth

James J. Hubbell

Harold Gregory

Donald May

Elroy Otte

MAJOR AREA: AGRICULTURAL MACHINERY

UNIT: UTILITY MAN

OBJECTIVE:

To develop the competency needed for occupational entry and advancement in service occupations in agricultural machinery dealerships.

COMPETENCIES NEEDED:

I. Competencies to be developed in school:

  A. Importance of clean working conditions.
  B. Importance of good personal appearance.
  C. Hand-tool identification and correct use.
  D. Preparation and cleaning of equipment for major overhall.
  E. Importance of the appearance of the building and grounds.
  F. Shop safety.
  G. Basic fundamentals of welding.

    1. Oxy-acetylene
    2. Electric

II. Competencies to be developed in business establishment:

  A. Clean building and working area.
  B. Dress appropriately for work.
  C. Clean and store hand-tools in proper place.
  D. Steam cleaning tractors and equipment.
  E. Care for grounds and outside equipment.
  F. Clean and arrange equipment on display.
  G. Practice safety.
  H. Welding simple jobs.

    1. Oxy-acetylene
    2. Electric

REFERENCES:

Agricultural Machinery-Service Occupations. Ohio State University.
Extending Instruction In Vocational and Technical Education In Agriculture To Off-Farm Agri-Occupations. Mississippi State University.
Developing and Operating Agriculture Occupations Programs. Colorado State Board for Voc. Educ.

MAJOR AREA: AGRICULTURAL MACHINERY

UNIT: SET-UP AND DELIVERYMAN

OBJECTIVE: To develop competencies needed as a set-up and deliveryman for any farm machinery business.

COMPETENCIES NEEDED:

I. Competencies to be developed in school:

   A. Interpretation of set-up manuals and set-up diagrams.
   B. Importance of proper delivery.

      1. Contact with customer and its importance.
      2. Effective communications.

   C. Hand tool identification and use.
   D. Selection and use of proper lubricants.
   E. Importance of proper tire inflation.

      1. Air.
      2. Liquid.

   F. Shop safety.
   G. Basic fundamentals of welding.

      1. Oxy-acetylene.
      2. Arc.

II. Competencies to be developed in the business establishment:

   A. Use set-up manual in setting up equipment.
   B. Proper assembly.

      1. Make trial operation.
      2. Double check all bolts, cotter pins, etc. for secureness.

   C. Make delivery with proper instruction manuals.
   D. Use proper hand tools.
   E. Properly clean and store hand tools.
   F. Refer to operator's manual for checking the following:

      1. Crankcase oil.
      2. Transmission and differential greases.
      3. Hydraulic oil system.
      4. Front wheel greases.
      5. Check and service air cleaner.

   G. Check tires for proper inflation.
   H. Practice safety.
   I. Welding.

      1. Oxy-acetylene.
      2. Arc.

REFERENCES:

I. Combines and Combining. H. E. Ridenour, Ohio State University, Columbus, Ohio.
II. Machines for Power Farming. Stone and Gulvin, John Wiley and Sons, Inc.
III. Farm Machinery and Equipment. 5th edition, N. P. Smith, McGraw-Hill Book Co.
IV. Profitable Soil Management. Knuti, Korpi and Hide, Printice Hall, Inc.
V. Operators and Service Manuals for Major Lines of Agriculture Machinery Manufacturers.

MAJOR AREA: AGRICULTURAL MACHINERY

UNIT: MECHANIC'S HELPER

OBJECTIVES:

I. To develop, in the student, an understanding of a mechanic's work.
II. To acquaint the student with the different handtools and the uses of each.
III. To acquaint the student with the fundamentals of a motor.
IV. To acquaint the student with the use of a shop manual.
V. To acquaint the student with a knowledge of the fundamentals of mechanics.

COMPETENCIES NEEDED:

I. Competencies to be developed in school:

   A. Basic principles of internal combustion engines.
   B. Fuel system: basic components and functions.
   C. Lubrication and its essentials.
   D. Functions and parts of cooling systems.
   E. Basic principles of the electrical system.
   F. Basic principles of welding.

      1. Oxy-acetylene
      2. Electric

   G. Shop safety.
   H. Identification and use of hand tools.
   I. Dis-assemble and clean parts to be overhauled.

II. Competencies to be developed in business establishments:

   A. Identify, recognize, and observe component parts of the engine and their functions.
   B. Observe construction and operation of the engine.
   C. Servicing the air cleaner.
   D. Clean and adjust carburetor.
   E. Check and service fuel lines.
   F. Flush crankcase.
   G. Service oil filter.
   H. Selection of lubricants and use.
   I. Flushing and cleaning radiator.
   J. Adjust and replace fan belt.
   K. Selection of coolant and use.
   L. Check for leaks and repair.
   M. Check thermostat..
   N. Adjustment, maintenance, and repair of small gasoline engines.
   O. Welding.

      1. Oxy-acetylene
      2. Electric

   P. Practice shop safety.
   Q. Clean, store, and make proper use of hand tools.

REFERENCES:

I. Briggs-Stratton Theory Manual
II. Briggs-Stratton Maintenance and Overhaul
III. Motor Company Training Service Manuals and Charts
IV. Motor Company Shop Manual
V. Lincoln Arc Welding Short Course. Cleveland, Ohio.
VI. Cook, Scranton, and McCauley, Farm Mechanics, Interstate Publishing Company

MAJOR AREA: AGRICULTURAL MACHINERY

UNIT: MECHANIC

OBJECTIVES:

I. Recognize and identify the fundamental principles involved in machines and the relationship of mechanisms and systems to processes and functions.
II. Adjust, service, and repair spark-ignition and diesel-type tractors and trucks.
III. Adjust, service, and repair farm equipment and machinery other than trucks and tractors.

COMPETENCIES NEEDED:

I. Competencies to be developed in school:

   A. Basic principles of internal combustion engines.
   B. Fuel system and basic components and function.
   C. Lubrication and its essentials.
   D. Functions and parts of the cooling system.
   E. Functions and parts of the electrical system.
   F. Functions and breakdown of the geartrain.
   G. Proper adjustment of brakes.
   H. Proper adjustment of clutch.
   I. Electric and oxy-acetylene welding.
   J. Shop safety.

II. Competencies to be developed in the business establishment:

   A. Completely overhaul engines.
   B. Check clutch assembly and overhaul.
   C. Check and repair or install cooling system.
   D. Check electrical system, repair and install:

      1. Generator and alternator
      2. Starter
      3. Battery
      4. Distributor
      5. Voltage regulator
      6. Wiring layout

   E. Check and install spark plugs and wires.
   F. Check and replace oil.
   G. Clean, check, and install fuel system.
   H. Clean, service, and install air cleaner.
   I. Check transmission and differential, replace parts, etc.

      1. Bearing wear
      2. Gear wear

   J. Repair and adjust brakes.
   K. Replace oil and grease according to operator's manual.

      1. Front wheels
      2. Crankcase

    3. Transmission
    4. Hydraulic system
    5. Rear axle bearings and seals

L. Check and repair hydraulic system.
M. Weld with electric and oxy-acetylene welder.
N. Practice safety.

REFERENCES:

I. Farm Mechanics Text and Handbook. Phipps, McColly, Scranton, and Cook.
II. Instruction in Farm Mechanics. U.S. Dept. of Health, Education, and Welfare, Office of Education.
III. Tractor Maintenance Principles and Procedures. Coordinator's Office, Southern Association Ag. Eng. and Voc. Ag., Barrow Hall, Athens, Georgia.
IV. Tractor Operation and Daily Care. Same as 3 above.
V. Farm Tractor Tune-up and Service Guide. Same as 3 above.
VI. I & T Shop Service Implement and Tractor Book. Technical Publications, Inc., Kansas City 5, Missouri.
VII. Doctor of Motors Prescription For Better Small Engine Overhauls. Perfect Circle Corporation, Hagerstown, Indiana.
VIII. Demonstrations For Farm Mechanics. The Interstate, Danville, Illinois.
IX. The Operation Care and Repair of Farm Machinery. Deere and Company, Moline, Illinois.
X. Servicing and Maintaining Farm Tractors. McGraw-Hill, New York, New York.
XI. Engineering Bulletin, FT-53, Farm Tractors. Standard Oil Co., Chicago, Illinois.
XII. Arc Welding Lessons for School and Farm Shop. James F. Lincoln Arc Welding Foundation, Cleveland 17, Ohio.
XIII. New Lessons in Arc Welding. Same as 12 above.
XIV. Film - ABC of Internal Combustion. General Motors Corporation, Film Library, Detroit, Michigan 48202.
XV. Film - ABC of the Diesel Engine. Same as 14 above.
XVI. Film - Prevention and Control of Distortion. Same as 12 above.
XVII. Film series - Set of 4, Tractor Operation and Daily Care, Part I, II, III, and Iv. Same as 3 above.
XVIII. Filmstrip - Practicing Arc Welding. Same as 10 above.
XIX. Film - Welding Comes To The Farm. Association Films, Inc., 347 Madison Ave., New York 17, New York.

MAJOR AREA: AGRICULTURAL MACHINERY

UNIT: SHOP FOREMAN AND ASSISTANT SHOP FOREMAN

OBJECTIVES: Develop the ability to

I. Recognize and identify the duties and responsibilities of each employee in the business.
II. Manage a work unit, to meet the needs of the business, customers, and employees.

COMPETENCIES NEEDED:

I. Competencies to be developed in school:

A. Acquaint student with working knowledge of the following:

1. Utility engineer
2. Set-up man and delivery
3. Mechanic trainee
4. Mechanic

B. Importance of service to the customer.
C. Importance of making work order.
D. Importance of supervision to all shop personnel.
E. Importance of planning and organizing job.
F. Importance of acquiring knowledge of the operating policies of the business.

II. Competencies to be developed in the business establishment:

A. Meet customer and make job order.
B. Scheduling of work for all personnel.
C. Practice and promote safety.
D. See that jobs are completed on schedule.
E. Check all completed jobs before delivery is made to customer.
F. Be a good service salesman.

MAJOR AREA: AGRICULTURAL MACHINERY

UNIT: THE PARTS MAN

OBJECTIVES:

I. To develop an understanding of the operating procedures of an agricultural machinery parts department.
II. To acquire the ability to carry out the functions of the parts man.

COMPETENCIES NEEDED:

I. Competencies to be developed in school:

  A. Acquaint student with some knowledge as parts trainee.
  B. Importance of clean and orderly working condition.
  C. Importance of a correct inventory.
  D. Importance of writing legibly.
  E. Importance of the cooperative work experience programs.
  F. Importance of being honest and sincere.
  G. Importance of providing proper training for trainees.
  H. Importance of reporting customer complaints.
  I. Importance of being able to assume all responsibilities.

II. Competencies to be developed in the business establishment:

  A. Responsible for keeping parts and area clean and orderly.
  B. Responsible for quick and efficient service.
  C. Responsible for maintaining an adequate inventory.
  D. The correct use of the parts and price books.
  E. Methods of displaying and advertising parts to increase sales.
  F. The proper methods of making parts orders.
  G. Be responsible for all parts sales and receipts.
  H. Maintaining good public relations.
  I. Importance of safety.
  J. Practice honesty and sincerity in the business.

REFERENCES:

I. Wilson, L. W., Farm and Power Equipment Retailer's Handbook, National Farm Power Equipment Dealers Association, 2340 Hampton Avenue, St. Louis, Missouri, 1964.
II. Parts Purchasing Control Procedure, Massey-Ferguson Company, 2200 DeKaven Avenue, Racine, Wisconsin.
III. Parts Sales Manual, John Deere, Inc., Moline, Illinois.
IV. Agricultural Machinery Parts Department Operating Procedures, Module No. 3, The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University, 980 Kinnear Road, Ohio, 43212.

MAJOR AREA: AGRICULTURAL MACHINERY

UNIT: SALES TRAINEE AND SALESMAN

OBJECTIVES:

- I. To learn how to meet the customer.
- II. To be able to present supplies and services to the customer.
- III. Tò learn how to overcome resistance.
- IV. To gain ability to close the sale.

COMPETENCIES NEEDED:

I. Competencies to be developed in school:

- A. Personal appearance.
- B. Knowledge of product.
- C. Knowledge of adaptability of equipment to a farm.
- D. Evaluating farmer's present machinery inventory.
- E. Keeping prospect list up-to-date.
- F. Staying in touch with the farmers.
- G. Quality prospects.
- H. Mechanical background.
- I. Salesmen and other employees relationships.
- J. Importance of price quotation to prospective buyers.
- K. Importance of salesmen and owner relationship.
- L. Personal qualifications:
    1. Honesty and dependability.
    2. Leadership.
    3. Self-control.
    4. Business-like attitude.
    5. Service minded.

II. Competencies to be developed in business establishment:

- A. Dress appropriately.
- B. Knowledge of the products to be sold.
- C. Work with experienced personnel to observe equipment for proper adaptation.
- D. Make inventory of equipment on several farms.
- E. List prospects and keep up-to-date.
- F. Make visits to farmers periodically.
- G. Observe all prospects and their financial responsibility.
- H. Improve mechanical knowledge.
- I. Maintain good relationship with owner.
- J. Study and keep up-to-date on price books.
- K. Observe and practice these quality traits:
    1. Honesty and dependability.
    2. Leadership.
    3. Self-control.
    4. Business-like attitude.
    5. Service minded.

REFERENCES:

Operator Manuals
Robinson, Blackler and Logan. Store Salesmanship, Prentice Hall.
Wingate and Nolan. Fundamentals of Selling, Southwestern Publishing Company.

SAMPLE LESSON PLAN

MAJOR AREA: AGRICULTURAL MACHINERY

UNIT: AGRICULTURAL MACHINERY MECHANIC'S HELPER

I. Steps of initiating the Agricultural Cooperative Training program:

A certain definite program should be followed after careful planning. A suggested outline that may be followed is:

A. Select student-learner who desires to become an agricultural machinery mechanic's helper.

1. Work with counselor.
2. Distribute application blanks.
3. Examine school records.

    a. Student folder.
    b. Kuder Vocational Preference Test.
    c. Differential Aptitude Test.
    d. Mental Maturity Test.
    e. Personality Inventory.

4. Opinions of principals and teachers.
5. Opinions of parents, through visitation.
6. Opinions of previous employers.
7. Opinions of friends of student.
8. Hold personal interview with student.
9. Have General Aptitude Test Battery administered.

B. Factors to consider in selecting training stations:

1. Attitude of employer and his employees.
2. Willingness to provide well-rounded work experiences.
3. Respectability and responsibility of the employer.
4. Volume of business.
5. Training equipment avilable.
6. Competent employees.
7. Variety of work available for training.
8. Company policies toward student-learner.
9. Standards of workmanship to be met.
10. Degree of specialization required.
11. Employer-employee relationships existing.
12. Wages to be paid student-learners.

C. Preparing the student-learner for employment.

1. Writing letters of application.
2. Completing application blanks.
3. Making the appointment.
4. Interviewing for the job.
5. Grooming and personal hygiene.
6. Making the proper impression on employer at first meeting.

D. The training plan should be made with the assistance of the employer and should outline those work experiences that the student will learn. It is designed to fill a three-fold purpose:

1. To serve as a guide to the coordinator and employer in providing the student-learner with both practical work experiences and technical information relating to his occupation.
2. To provide a record of the student's progress on the job.
3. To provide a record of his related studies.

SAMPLE TRAINING PLAN[1]

SCHEDULE OF WORK EXPERIENCES	RECORD OF WORK	COURSE OF STUDY	RECORD OF STUDIES
The Student should learn to:		The Student will study:	
Observe & Practice Safety Procedures.		Fundamentals of Safety.	
Clean & care for shop & equipment.		Types & uses of cleaning materials.	
Use steam cleaner & other types of cleaners and degreasers.		Types & uses of solvents & degreasers.	
Select proper type and size tool for each particular job.		History & development of farm tractors and engines.	
Use parts list & service manual for farm machinery.		Fundamentals of two-cycle internal combustion engines.	
Repair and service air cleaner assembly.		Importance of maintaining air cleaning systems.	
Service cooling systems on farm engines.		Principles of the cooling systems.	
Select proper type & grade of oils and greases.		Types & characteristics of oils & lubricants.	
Repair & adjust carburetors found on farm engines.		Principles of carburetion and fuel mixture induction.	
Repair & adjust L.P. Gas carburetion systems on farm engines.		Fundamentals of governor functions.	
Select & properly install gaskets & gasket materials.		Principles of valve operation.	
Repair & service electrical systems.		Characteristics of the electrical system.	
Grind & adjust valves and tappets on farm engines.		Types of bearings & their uses.	
Repair and service clutch.		Procedures for grinding valves.	
		Procedures for replacing pistons and rings.	
		Procedures for replacing rod & main inserts and caps.	

Repair, service & adjust braking systems.		Principles of gears and gear ratios.	
Fit and properly install rods, caps and main bearings.		Theory of Hydraulics.	
Repair & adjust governor.			
Repair & service hydraulic system.			
Repair & service power train.			
Adjust steering system.			

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[1] Have student work out list of work experiences that would be practical for his particular training situation. Revise the list of work experiences and then finalize the training with the employer: add or delete items as employer desires.

Assignment Sheet
in

TRACTOR MECHANICS

Subject: Construction and Action of Storage Batteries

References: Automotive Mechanics -- Crouse pp. 181 - 185
Elements of Automotive Mechanics - Heitner, et al. pp. 285 - 290

Advanced reading:

Elements of Electricity - Hausman pp. 57 - 64

Explanation: The term "storage battery" might suggest that electricity is stored up in the battery. This is not true;--electricity cannot be stored in batteries. What actually happens is that the charging current produces a chemical action which makes the lead plates "unlike" in composition and thus meet the same requirements as those of a primary cell. (See Assignment, Primary Cells)

This chemical action is a complicated process and is not generally understood except by chemists. It is the purpose of this assignment to explain the elementary chemical processes which take place, both in charging and discharging of storage batteries, and to point out the conditions which affect this chemical action.

NOTE: The term "battery" is used to denote two or more cells connected in series for the purpose of increasing the voltage. Most automobile batteries are composed of three which operate independent of each other, but which are connected together in series just as two or more dry cells may be connected together in series to produce a higher voltage. (Experiment No. E-16)

Directions: First, perform Experiment No. E-19.

Study the reference material listed.

Answer the following questions:

Questions:

1. Describe briefly the construction of the common type of battery case.
2. Of what material are the perforated plate frames made? Why?
3. What material is contained in the grid perforations of the positive plates? Negative plates?

4. How can one distinguish by sight between the positive and negative plates?

5. What is the purpose of the separators? Of what three materials are they commonly made?

6. Sketch a cross section of the most common type of separator.

7. What does "glass insulated" battery mean?

8. What does the term "17 plate" battery mean?

9. Why must the separators be porous?

10. The "electrolyte" of a battery consists of what two substances?

11. What is the meaning of "specific gravity"?

12. What is the normal specific gravity of the electrolyte of a new and fully charges storage battery?

13. With what is the specific gravity of cells commonly tested?

14.. What changes take place in the electrolyte as the battery is discharged?

15. What changes take place when the cell is being charged?

16. What is the normal voltage of one charged lead cell?

17. (a) What does the term "capacity" of a battery mean?
    (b) What is the unit for measuring battery capacity?

18. What determines the capacity of a cell?

19. A certain battery can deliver a maximum of 50 amperes of current for two hours. Can this battery deliver 100 amps. in one hour? Explain.

20. How many positive plates does each cell of a 19 plate battery contain?

Thought Questions

21. If a positive and negative place of one cell of a battery has a "dead" short, how will this affect:

    (a) The output of this cell?
    (b) The voltage of the other two cells?
    (c) The voltage of the battery?

22. Give two reasons why there is so much battery failure in the winter.

23. Modern tractors require batteries of higher capacities than those of 10 to 15 years ago. Why?

Answer Sheet
for

TRACTOR MECHANICS ASSIGNMENT

Subject: **Construction and Action of Storage Batteries**

1. It is box-like in shape, containing three compartments and is made of hard rubber or other acid resisting material

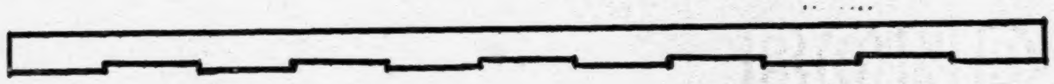
2. (a) Lead-antimony metal.
   (b) To make them acid resistant and to give them rigidity.

3. (a) Lead peroxide.
   (b) Spongy lead.

4. The lead peroxide of the positive plate is dark brown, while the lead of the negative plate is dull gray.

5. (a) To prevent the positive and negative plates from shorting out.
   (b) Wood, spun glass, and rubber.

6.



7. It means that spun glass separators are used.

8. That each cell has 17 plates.

9. To permit the liquid to flow between the plates.

10. Sulphuric acid and water.

11. How many times heavier than water a substance is.

12. 1.280 to 1.300.

13. A hydrometer.

14. The sulphuric acid changes to lead sulphate and water. The specific gravity of the electrolyte lowers.

15. The lead sulphate and water change back to sulphuric acid.

    The specific gravity rises.

16. 2 volts (2.1 maximum).

17. (a) The amount of current can flow from it in a given time.

    (b) Ampere-hour.

18. The total area of the plates which contacts the electrolyte.

19. No; the chemical action between the plates and electrolyte cannot take place fast enough at high rates.

20. Nine.

21. (a) There will be no output.
    (b) The voltage of the other two cells will not be changed.
    (c) The battery will show 4 volts.

22. (a) The chemical action of the battery slows at low temperatures.
    (b) Thicker engine oil causes the starting motor to take more power from the battery.

23. Because of many new electrical devices: fans, lighters, heaters, etc.

Project Sheet
in
TRACTOR MECHANICS

Subject: "Spark Plug Ailments"

References: Champion Spark Plug Service
Champion Spark Plug Co., Toledo, Ohio

Materials:
Several discarded spark plugs.
3/8" panel board, approximately 14" x 36"
1" x 2" white pine molding for panel board
8 to 10 blank cards, 3" x 5"
White shellac

Explanation: An experienced mechanic can usually tell by the appearance of a spark plug whether or not it is functioning properly. He can also usually tell the cause of plug failure and thus diagnose many ordinary engine troubles. In order to assist the student in auto mechanics in understanding spark plug troubles, the following project is recommended:

Procedure:

1. Collect several discarded spark plugs from service stations and garages. Do not attempt to clean them.

2. Study the reference material concerning spark plug troubles. Select a suitable plug to illustrate the following troubles:

    a. Cracked insulator
    b. Caked grease and dirt on insulator
    c. Gas leak around insulator
    d. Broken core
    e. Oil fouling
    f. Gas fouling
    g. Burned out electrodes
    h. Crusted electrodes

3. Select two plugs which show evidence of good physical and operating conditions. Clean one according to acceptable methods.

    NOTE: Since the color and condition of the core, electrodes, and deposit plays an important part in diagnosing spark plug troubles, it may be well to consult an experienced person to assist in selecting the various plugs for the project.

4. On a piece of wrapping paper, lay out centers for holes in which to mount the spark plugs. The suggested dimensions in Figure 1 may be used.

Figure 1

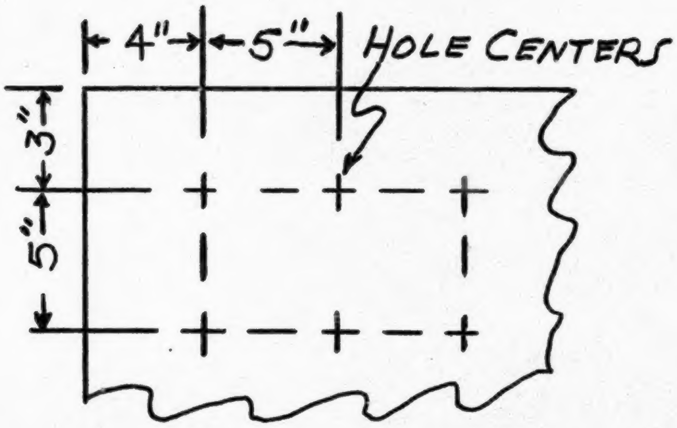
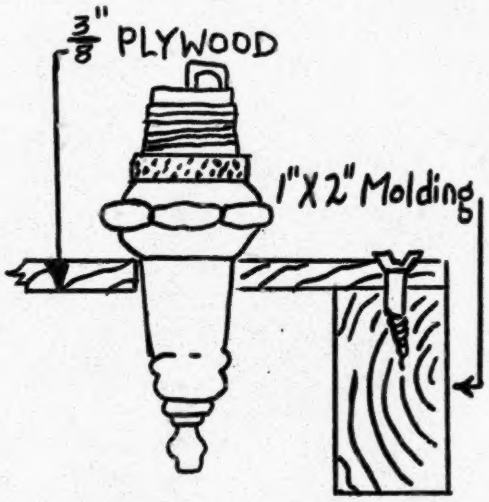


Figure 2



5. Place layout paper on the panel board and mark hole centers with a punch or nail. Drill holes for each plug approximately the thread size of the plug.

6. Attack 1" x 2" molding around the four edges of the panel board as shown in Figure 2.

7. Prepare 3" x 5" cards for each spark plug according to the following suggested example:

GAS FOULED PLUG

Symptoms: Dry, fluffy carbon deposit on entire firing end of spark plug.

Probable causes:
1. Too rich a fuel mixture
2. Poor choke adjustment
3. Too cold a plug
4. Plug cleaned too often

Results on engine performance: Spark shorts through carbon, causing misfiring.

Possible remedies: Lean out the mixture; correct choke adjustment; replace with hotter plug.

8. Mount plugs in holes up side down (except the plug with a cracked insulator) and wire secure with safety wire.

9. Mount cardboards under each spark plug. Brush clear shellac over entire panel.

Unit Test Sheet
on

TRACTOR ENGINE PRINCIPLES

I. Complete the following to make a true complete statement:

1. A complete cycle of a tractor engine consists of four strokes called: 1.__________, 2.__________, 3.__________, and 4.__________.

2. During the intake strokes, the position of the intake valve is ________ and the exhaust valve is __________________________.

3. The tendency of matter to remain stationary when acted upon by a moving force, and to continue to move after the force ceases, is called ______ ______________________________.

4. In one revolution, the crankshaft revolves ______ degrees. In one cycle it revolves _________ degrees.

5. Expressed in degrees, each stroke of a piston is _________ degrees from the next.

6. The relation of the volume of a cylinder when the piston is at the bottom, to the volume when the piston is at the top, is called ________________ ____________ ratio.

7. The pressure of the mixture when the piston is at top dead center is called ________________ pressure. The unit for measuring pressure of gases is _____________________________.

8. The pressure within a cylinder caused by the explosion (burning) of the mixture is called ___________________________ pressure.

9. The pressure in a cylinder at the moment of the explosion of the mixture is approximately ______ times greater than the pressure immediately preceding the explosion.

10. Without altering the bore (diameter) of the cylinder, more power can be developed by increasing the __________________ of the cylinder.

11. The ratio of the amount of mixture actually drawn into a cylinder on the intake stroke, to the maximum amount the cylinder could hold, is called the __________________________________ of the cylinder.

12. This ratio is decreased by any restrictions in the air or mixture intake passages in any of the following parts: 1.________________, 2.____________________, 3._________________, 4.__________________.

13. On the exhaust stroke, the exhaust gases continue to flow out of the cylinder after the piston has reached the top because of the __________ of the moving gases.

14. On the exhaust stroke the exhaust valves in the average automobile engine do not close until the crankshaft has turned approximately ____________ degrees past top dead center.

15. If the compression pressure of the cylinders of the tractor engine are 110, 110, 90, 110, 100, and 110 lbs. per sq. in., the approximate combustion pressures of the respective cylinders are: _____, _____, _____, _____, _____, and _____ lbs. per sq. in.

16. In the above case, the uneven combustion pressures on the cylinders in their firing order would tend to make the engine ____________________.

II. Mark + for true and 0 for false opposite the following statements:

___ 1. A tractor engine is a form of heat engine.

___ 2. It develops its power from the fact that burning gases expand in volume.

___ 3. On the intake stroke, the intake valve opens when the piston reaches top dead center.

___ 4. The inertia of the fuel-air mixture and the exhaust gases have an effect upon the timing of the valves.

___ 5. Mixture continues to enter the cylinder after the piston has started upward on the compression stroke.

___ 6. The spark which ignites the mixture occurs slightly before the piston reaches top dead center on the compression stroke.

___ 7. A piston of a tractor engine travels faster on the power stroke than any other.

___ 8. When a piston travels either upward or downward, it moves at a higher rate of speed through the top 90^o of the crankshaft rotation than it does through the bottom 90^o.

___ 9. On the power stroke, the exhaust valve opens before the piston reaches bottom dead center.

___10. On the exhaust stroke, the flow of burnt gases out of the cylinder continues after the piston reaches top dead center.

___11. Most of the force applied to a piston is during the last half of the power stroke.

___12. The only way to increase the power of a cylinder is to increase its diameter (bore).

___13. An increase in the volumetric efficiency of a cylinder increases its power.

___14. The volumetric efficiency of a cylinder can be increased by increasing the size of the intake valve opening.

___15. Intake and exhaust valves are timed to open and close at top or bottom dead center of the piston.

___16. For best efficiency, the intake valve should be timed to close at the instant the mixture stops flowing into the cylinder.

Answer Sheet
for

TRACTOR MECHANICS UNIT TEST

Test: Tractor Engine Principles

Part I.

1. Intake, compression, power, exhaust.
2. Open, closed
3. Inertia
4. 360; 720
5. 180
6. Compression
7. (a) Compression
   (b) Lbs. per sq. ft.
8. Combustion
9. Four
10. Compression ratio; volumetric efficiency. (Either or both)
11. Volumetric efficiency
12. Air filter; carburetor; intake manifold, intake valve opening.
13. Inertia
14. 40° to 50°
15. 440, 440, 360, 440, 400, 440
16. Vibrate

Part II.

1. +
2. +
3. 0
4. +
5. +
6. +
7. 0
8. +
9. +
10. +
11. 0
12. 0
13. +
14. +
15. 0
16. +

BIBLIOGRAPHY, AGRICULTURAL MACHINERY

BOOKS

Agricultural Machinery--Service Occupations, Ohio State University.

Carnegie, Dale, How to Win Friends and Influence People.

Cook, Scranton, McCauley, Farm Mechanics, (The Interstate Publishers).

Smith, N. P., Farm Machinery and Equipment, (McGraw-Hill Book Company, Fifth Edition).

Stone and Gulvin, Machines for Power Farming, (John Wiley and Sons, Inc.).

Wilson, L. W., Farm and Power Equipment Retailer's Handbook, (National Farm Power Equipment Dealers Association, 2340 Hampton Avenue, St. Louis, Missouri, 1964).

Wingate and Nolan, Fundamentals of Selling, (South-Western Publishing Company).

HORTICULTURE

The members of the committee responsible for developing curriculum for students employed in the area of horticulture divided the presentation of information into the following categories:

Greenhouse design and Planning

Propagation in a Greenhouse

Vegetable Production in a Greenhouse

Potted Plant Production in a Greenhouse

Nursery Management

Lawns and Turf

Ornamental Horticulture

Landscape Design

Cut Flowers in a Greenhouse

The curriculum designed here is for the purpose of teaching individuals for entry jobs in greenhouses, nursery stock growers, roadside and park maintenance, golf course managers, and other similar fields. Competencies required to succeed in the horticulture business include: knowledge of basic plant science, knowledge of basic soil science, some mechanical skills in using hand and power tools, ability to grade plants, ability to read and follow planting plans, ability to care for plants and plant material, ability to plant or set out trees, shrubs, and other plants correctly; knowledge of proper use of fertilizer, mulching, preparation of soil, etc.; knowledge of how to prune plants correctly; ability to design a planting plan; ability to recognize and control weeds (including the use of chemicals); ability to market horticultural plants and supplies. In addition, the individual must like his work and have the personality traits that are needed for success in other fields--such as a pleasing personality, good morals, honesty, dependability, a good attitude, industriousness, willingness to work, versatility, dexterity, and safety consciousness.

The committee members listed competencies that needed to be developed in each of the nine areas into which the curriculum is broken down; then a suggested plan of teaching has been included for one unit in each case. Individuals responsible for planning the curriculum for horticulure are:

Glen Gardner, Chairman
Glynn Ashley
Samuel Stiles
Lon Shell
Leon Applegate

Richard Meder
Robert Nunn
L. W. Smith
George Head
Delbert Holman

MAJOR AREA: HORTICULTURE

UNIT: PLANT GROWING STRUCTURES, PLANNING, DESIGN AND MAINTENANCE

OBJECTIVE: To Develop an Understanding of the Planning, Design, and Construction of Plant Growing Structures.

SUGGESTED TEACHING TECHNIQUES:

I. Supervised study.
II. Class discussion.
III. Use of opaque projector.
IV. Field trips.
V. Resource personnel.

COMPETENCIES TO BE DEVELOPED:

I. Identifying various types of plant growing structures.
II. Selecting sites for plant growing structures.

    A. Market
    B. Sunlight
    C. Water
    D. Labor
    E. Fuel Supply

III. Selecting the correct plant growing structure for a desired purpose.
IV. Types of construction of plant growing structures.
V. Framing materials used in each type structure.
VI. Advantages and disadvantages of plastic and fiberglass covered greenhouse.
VII. Glazing materials used in greenhouse construction.

    A. Glass
    B. Plastic Glazing Materials

        1. Polyethylene
        2. Polyvinyl chloride (PVC or vinyl)
        3. Polyester (mylar)

    C. Rigid Fiberglass

VIII. Circulation and ventilation systems and their operation.
IX. Types of heating systems, their operation and economy.
X. Cooling systems and their operation.
XI. Humidity control and its purpose.
XII. Lighting systems, their cost and operation.
XIII. Advantages and disadvantages of single and double working benches.
XIV. How to figure a bill of materials.

MAJOR AREA: HORTICULTURE

UNIT: MAINTAINING PLANT GROWING STRUCTURES

OBJECTIVES:

I. To teach students the economic importance of proper maintenance.
II. To teach students terminology pertinent to maintenance.
III. To develop in the student skills necessary for proper maintenance.

SUGGESTED TEACHING TECHNIQUES:

I. Field trips
II. Resource personnel
III. Demonstrations
IV. Student participation

COMPETENCIES TO BE DEVELOPED:

I. Tools used in maintenance.
II. Materials used in maintenance.
III. Reglazing procedure.
IV. Select and replace plastic or fiberglass.
V. Prevention of excessive corrosion of metal parts.
VI. Using non-toxic wood preservatives to prevent decay.
VII. Painting greenhouse exterior and interior with proper paints and applicators.
VIII. Selecting lumber for repairing flats, benches and other structures.
IX. Repair of plumbing in watering and heating systems.
X. Maintaining and adjusting watering equipment.
XI. Maintaining and adjusting circulation system.
XII. Maintaining and adjusting heating system.
XIII. Maintaining and adjusting ventilation equipment.
XIV. Adjusting humidity indicators.
XV. Proper use of timing devices.
XVI. Use and maintenance of fertilizing equipment.

REFERENCES:

Commercial Flower Forcing, (McGraw-Hill Book Company, Inc. N. Y.)..

Circular 905, Plastic Greenhouses, University of Illinois, College of Agriculture, Cooperative Extension Service, Urbana, Illinois.

Catalogs of Greenhouse Parts, Supplies, and Accessories, National Greenhouse Company, Main Office, Pana, Illinois.

Construction of Plastic Greenhouses, Circular 492, Purdue University, Agricultural Extension Service, Lafayette, Ind.

Greenhouse Construction and Heating, Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

Constructing, Maintaining and Using Plant Growing Structures, Module No. 7, The Center for Research and Leadership Development in Vocational and Technical Education, Ohio State University, 980 Kinnear Road, Columbus, Ohio.

MAJOR AREA: HORTICULTURE

UNIT: PROPAGATION IN A GREENHOUSE

OBJECTIVE: To develop an understanding of the science of propagation in the following areas:

I. Vegetative Propagation Competencies to be developed:

A. Cuttings - leaf, stem, and root

1. To develop in the student the ability to produce plants from cuttings.
2. To understnad plant propagation by this method.
3. To produce plants for home, school, and commercial use.
4. To gain proficiency in this method to a degree necessary to satisfy standards required by your supervised training station.
   NOTE: This objective could be added to any of the other skills in this area according to need. Leaf, stem, and root, cuttings are the most common for the ornamentals.

B. Air Layering

1. To understand why roots can be induced to grow by this process and the advantages and disadvantages of this method of propagation.
2. To gain experience in performing the various steps in this method of plant propagation and to know which plants are best propagated by this method.
3. To acquire additional plants for home improvement projects.

C. Tip Layering

1. To understand this method of rooting certain plants.
2.. To know the types of plants on which this process works best and to gain experience in this type of vegetative propagation.
3. To produce plants for home garden.

D. Simple Layering

1. To understand this method of plant propagation.
2. To gain experience in this plant production method.
3. To produce plants for home projects.

E. Runners - (Strawberries)

1. To understand this type of vegetative propagation.
2. To produce additional plants for the home lawn.

F. Stolons

1. To understand vegetative propagation with stolons.
2. To produce additional plants for the home lawn.

G. Offsets (Date Palm)

1. To understand plant propagation by this method.

2. To gain experience in this type of operation.
3. To acquire additional plants for personal or commercial use.

H. Crowns (Chrysanthemums)

1. To understand what crowns are and how they may be used in plant propagation.
2. To secure additional plants, and to fit certain plants to their beds or containers.

II. Seed Propagation Competencies to be developed:

A. Germination Factor

1. To understand factors that influence the germination of seeds and the growth of seedlings.
2. To appreciate the importance of satisfying all conditions for optimum germination of seeds in attempting to propagate plants from seeds.

III. Grafting and Budding Competencies to be developed:

A. Whip or tongue grafting

1. To gain experience in propagating by whip or tongue graft.
2. To understand the conditions where you would use a whip or tongue graft.
3. To improve or repair plants at home by whip or tongue graft.

B. Side graft

1. To gain experience in making a successful side graft.
2. To understand the conditions under which you would prefer to use a side graft.
3. To apply your skill to a problem at home where the side graft is adaptable.

C. Cleft grafting

1. To gain experience in making a cleft graft.
2. To understand the conditions where you would use a cleft graft.
3. To apply the cleft graft to plants at home.

D. Bark grafting

1. To gain experience in making bark grafts.
2. To understand the conditions where you would use a bark graft.
3. To apply the bark graft to propagation problems at home.

E. T-budding or shield budding

1. To gain experience in making successful T-bud grafts.
2. To understand conditions where T-buds are applicable.
3. To apply T-budding to the improvement or propagation of plants at home.

F. Patch budding

1. To gain experience and skill in making patch grafts.
2. To understand under what conditions you would use a patch bud.

SUGGESTED TEACHING TECHNIQUES:

I. Basic

A. Classroom text is essential, to be used in correlation with study guides. We are suggesting PLANT PROPAGATION, PRINCIPLES AND PRACTICES by Hartmann and Kester. Prentice Hall Publishing Co. It is desirable for the students to find the information themselves in some cases.
B. Develop a vocabulary or glossary of terms pertinent to the unit.
C. Provide displays of sexual and asexual reproduction in various phases of maturity from the initial state to a growing plant.
D. Discussion techniques to bring out individual thought and participation.
E. Demonstrations by either instructor and/or specialist in the field for each area. Give a JIT type demonstration.
F. Use drawings or illustrations on the chalkboard, opaque or overhead with transparencies.

II. Seed Propagation

A. Prepare a display of various seeds--learn to identify. (horticultural types)
B. Prepare a display of the lima bean showing growth stages. (Use Ohio State reference module.)
C. Students conduct demonstration to show effect of moisture, air, and temperature upon germination.
D. Have students conduct a germination test.
E. Study sample packets of seeds and seed catalogs plus samples of treated seeds.
F. Have students grow seedlings in flats--those suitable for transplants.
G. Review and discuss displays of insect and disease damage. Show slide series of insects and diseases--select applicable slides.
H. Study plant parts, especially the flower-reproductive organs. Study pollen under the microscope.
I. Study pollinating devices such as a tomato buzzer.

III. Vegetative Propagation

A. Demonstrate steps involved in each type.
B. Have each pupil make a cutting--select plants which develop quickly.
C. Have pupils work in groups or as teams making flats of various cuttings using rooting hormones.

IV. Budding and Grafting

A. Have students prepare a display board of various steps involved in each type of graft. Could also be used as exhibit in horticulture division of state or county fair.

B. View plants that have been grafted successfully and unsuccessfully. Discuss reasons for successes and/or failures.

C. Have students work in groups and practice techniques on non-living material.

D. After acquiring competencies geared to laboratory standards, techniques to be applied to living plants. Timing is paramount for selection, storage, and graft of the scion to host plant. Select those that fit your facilities, materials, and skill. Begin with one and success will bring added confidence. Suggest instructor practice at home first or gain proficiency at summer school course in horticulture or workshops in your area.

REFERENCES:

I. Books

A. Christopher, E. P., INTRODUCTORY HORTICULTURE, New York: McGraw-Hill Book Co., Inc., 1958.

B. Edmond, J. B., et al., FUNDAMENTALS OF HORTICULTURE, New York: The Blackiston Co., Inc., 1953.

C. Hartman, H. T. and Kester, Dale E., PLANT PROPAGATION, PRINCIPLES AND PRACTICES, Englewood Cliffs, N. J., Prentice-Hall, Inc., 1961.

D. Mahlstede, J. P. and Haber, Ernest S., PLANT PROPAGATION, New York: John Wiley and Sons, Inc., 1962.

E. Moon, Truman J., Mann, Paul B., and Otto, James H., MODERN BIOLOGY, New York, Henry Holt and Co., 1956.

F. Well, James S., PLANT PROPAGATION PRACTICES, New York, The MacMillan Co., 1964.

G. Sunset, WESTERN GARDEN BOOK.

H. Adriance-Brinson, PROPAGATION OF HORTICULTURAL PLANTS.

I. THE BALL RED BOOK - 11th Edition, Geo. J. Ball, Inc., P. O. Box 10175, Palo Alto, California, 94303. (used by commercial growers)

J. Laurie, Keplinger, Nelson, COMMERCIAL FLOWER FORCING, McGraw Hill Book Co.

II. Bulletins

A. USING THE SCHOOL GREENHOUSE. Penn. State Univ. College of Agr., Dept. of Agr. Ed., University Park, Pennsylvania, Vol. IV, No. 4, 1963, by Charles C. Drawbaugh.

B. A ONE YEAR GREENHOUSE LAB. COURSE OF STUDY FOR VO-AG IN PENNSYLVANIA. by Charles C. Drawbaugh, Dept. of Public Instruction, Penn. State Univ. Dept. of Ag. Ed., University Park, Pennsylvania.

C. Home and Garden Bul. #80, U.S.D.A., HOME PROPAGATION OF ORNAMENTAL TREES AND SHRUBS.

D. U.S.D.A. Farmer's Bul. Nos. 1026, 1028.

III. Useful advertising material

A. GROWER CIRCLE NEWS. Yoder Bros. Inc., Barbeton, Ohio (Keeps you current with latest happenings in horticulture.)

B. GROWER TALKS. Geo. J. Ball, Inc. (costs $1.25/yr. for subscription)

C. BALL CATALOG plus catalogs from numerous other commercial seed houses. All available free upon request. Could be useful in planning your greenhouse management units.

D. CHRYSANTHEMUMS. Technical Bul. #300. Beo. J. Ball, Inc., free
Box 10175, Palo Alto, California 94303.

IV. Film Strips - Overhead Transparencies. Available from NASCO, see catalog for number.

A. Parts of a Seed - OT13 - 4.75
B. Life Cycle of Seed Plants - angiosperms - OT61 - 5.15
C. Stem Structure - OT 103-22 - 5.00
D. Roots - Structure and Function - OT 109-28 - 3.00
E. Flower structure - OT 112-31 - 3.25
F. Flower fertilization - OT 113-32 - 6.00
G. Seed germination - dicot bean - OT 118-37 - 4.75
H. Seed germination - monocot, Corn - OT 119-38 - 3.25
I. Oxygen-Carbon dioxide cycle - OT 122-41 - 4.75
J. Photosynthesis - base and 8 overlays - OT 73 - 8.95

V. Modules

A. HORTICULTURE - SERVICE OCCUPATIONS. 12 modules in a course preparing for entry in this field. The Center for Research and Leadership Development in Vocational and Technical Education, The Ohio State University 980 Kinnear Rd., Columbus, Ohio.
B. FACILITIES, SUPPLIES, BASIC INFORMATION AND LABORATORY EXERCISES for teaching PLANT PROPAGATION in Arizona Dept. of Vo-Ag, University of Arizona, Tucson.
C. A TRAINING PROGRAM FOR VO-AG IN ORNAMENTAL HORTICULTURE, Louisana State Dept. of Education, Vo-Ed Division, Louisana State University, School of Vocational Education.

SAMPLE LESSON PLAN

Propagating Plants by Cuttings

I. INTRODUCTION

This technique relies on a trait peculiar to most perennials and bulbs and annuals. It is by these methods that many plants are propagated because of its ease and the results are generally true to type.

This is the most important method of propagating ornamental shrubs-deciduous species as well as the broad and narrow-leaved type of evergreens.

II. IMPORTANT QUESTIONS THAT NEED TO BE ANSWERED AND UNDERSTOOD ABOUT THIS TYPE OF PLANT PROPAGATION:

1. What is propagation by cuttings and what are its advantages and limitations?

Cuttings or slips are detached pieces of plant parts taken for the purpose of producing new plants.

Under proper conditions, they root readily and become individual plants which are similar in every respect to the parent plant.

Use of cuttings for propagation purpose has become very popular in recent years, especially because of its adaptations to local plants. Some of the important advantages which this method has over others are:

- a. It is cheap and convenient.
- b. It is simple and easy to propagate by this method.
- c. It is possible to increase desired plant stock more rapidly than by seeds because a cutting produces a larger plant much sooner than would seeds.
- d. Since the resulting new plant is absolutely true to type, that is, identical to the parent plant, only desirable varieties may be selected for use. This is especially valuable when a large number of uniform individuals are needed.

Among its limitations are:

- a. No new varieties or strains can be obtained by the use of cuttings.
- b. Not all plants can be propagated by means of cuttings.

2. What are the adaptations of root cuttings and how are they used most successfully?

Root cuttings are customarily made from roots not smaller than ¼ inch in diameter, which are cut into lengths of 2-6 inches.

These are planted in horizontal position, at a depth of approx. 1".

Root cuttings for propagation purposes are adapted for plants which ordinarily produce suckers freely, or those species of plants which do not root easily from stem cuttings.

3. What type of plant is adapted for propagation by leaf cuttings and how are leaves propagated?

Succulent plants with thick, fleshy leaves are readily propagated in this manner as the leaves contain a sufficient supply of reserve food. African Violet and Begonias are best propagated by this method.

Matured leaves are removed from the plant with the petiole attached to the blade portion. The simpler method involves the insertion of the petiole into starting medium so that the blade portion only is above the surface. If many individual plants are desired from a single leaf, it should be placed horizontally on the surface of the medium. Then make many slits through the thick veins on the blade. Tiny individual plants will start at the point where the veins were slit.

Aside from the planting material recommended in question 5, leaf cuttings may be also started in about an inch of water, then planted later in soil.

4. What are the different kinds of stem cuttings and how should each be started?

a. Softwood Cuttings. These are obtained from actively growing herbaceous perennials such as begonias, coleus, carnations, chrysanthemems. Cuttings are preferably taken when young, non-flowering shoots are obtainable.

The parent plant should be vigorous and healthy. A terminal growth about 3 inches in length should be cut diagonally across the stem at the base of a mode. The cutting should have at least 3 nodes, preferably more. Cut off about 2/3 of the leaves at the lower end of the slip. Making the cut at the base of the node is important in making all cuttings because substances capable of producing a callus and roots are concentrated at the nodes.

As soon as the slip is removed from the plant, it is advisable to plunge the ends into cold water, or wrap them in damp newspaper for an hour or more, to prevent wilting. This practice does not apply to geranium and other plants which exude a milky sap. Cuttings from such plants should be sprinkled lightly with water and spread out on a surface where they will be exposed to the air for several hours. This will give the bleeding cells an opportunity to become sealed and there would be less danger of rot.

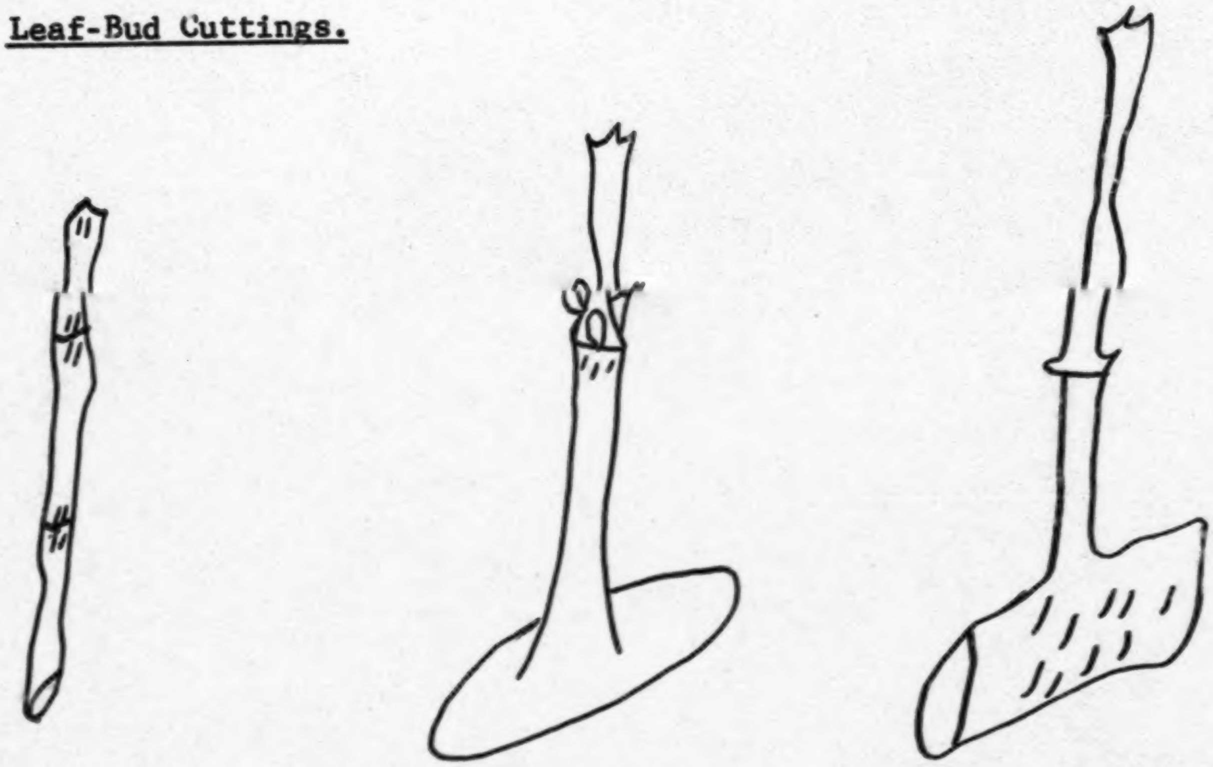
b. Half-Ripened Stem or Semi-Hardwood Cuttings. Cuttings with terminal shoots are preferred though other parts may be used satisfactorily. Shoots that snap clean when broken are considered ideal and these are cut at the base of the node, slightly diagonally, in lengths of 3-6". Lower leaves are cut off at the petioles, leaving only a few young ones.

Since semi-hardwood cuttings are succulent and tender, it is important that they be handled so as to prevent wilting. They should be cut in the early morning while the material is turgid, and wrapped in moist cloth or moss until planted. For best results, cool temperature shade, and high humidity should be maintained during the early rooting stages.

c. Hardwood or Dormant Stem Cuttings. Cuttings of mature wood from deciduous trees and shrubs may be used for propagation. Stems of pencil diameter or slightly larger may be cut in lengths of 4-12", the top being cut off slightly above the node and the base slightly below a node.

This type of cutting requires deep planting, almost 2/3 of the length being buried. Appearance of new shoots is usually slow but once started, they are vigorous and fast growing.

d. Leaf-Bud Cuttings.



Simple Cutting Heel Cutting Mallet Cutting

Types of stem cuttings, especially adapted for semi-hardwood and hardwood cuttings.

5. What are the adaptations and uses of the various rooting media commonly used?

The ideal rooting medium must be one that affords good aeration, good drainage, and yet, retentive of moisture. Among the most commonly used are:

a. Sand. Clean, sharp sand is used most frequently. It should be clean, free from dirt or any organic matter since these may cause fungus and bacterial development.
b. Acid Peat. Since this is composed largely of partly decomposed organic material, it has high water-holding capacity. Also it affords ample aeration and it has been found to be very satisfactory.
c. Sand and peat moss. Cuttings which do poorly in sand often do well when a mixture of equal volumes of sand and peat are used.

d. Vermiculite. "Vermiculite" is a material which goes by this trade name. Its use, both by itself and mixed with sand has so far been shown to be very satisfactory.

e. Other Media. Other materials such as sphagnum moss, and other partially decayed organic matter have proved satisfactory, either alone or in a mixture with sand.

6. How should cuttings be cared for and when should they be transplanted in permanent media?

After planting, cuttings, and media should be watered and kept in the shade for two weeks. Generally, a humid atmosphere is desirable. Sufficient moisture is necessary at all times but the medium should never become soggy from excessive watering.

Depending upon the type of plant used and other external conditions, rooting may be expected within 3-4 weeks to 2-3 months. When the roots are an inch or more in length, cuttings should be transplanted into soil for permanent growth.

7. What is the role of plant hormones in propagation of cuttings?

Many new hormones which stimulate rooting have become available to the plant grower. In most instances, these have proved helpful. But certain definite facts have become known to us. In general, cuttings treated with hormone root more quickly and have heavier root systems than untreated. However, it has been shown that hormones cannot induce root formation in cuttings of plants which were never known to root before.

No one is able to make any blanket recommendation. Until more research has been made, it is best to carefully follow recommendations made by the manufacturer and use hormones that you find work best for you after experimenting personally.

Additional Readings:

1. Hartman & Kester, PLANT PROPAGATION, PRINCIPLES AND PRACTICES.
2. Sunset, WESTERN GARDEN BOOK.
3. Adriance-Brinson, PROPAGATION OF HORTICULTURAL PLANTS.

AREA: PLANT SCIENCE
Student's Name ____________

UNIT: Vegetative Propagation
Date ____________

EXERCISE No. ___. Air Layering

Objective:

1. To understand why roots can be induced to grow by this process and the advantages and disadvantages of this method of propagation.
2. To gain experience in performing the various steps in this method of plant propagation and to know which plants are best propagated by this method.
3. To acquire additional plants for home improvement projects.

Introduction:

Air layering is a technique that has been used for more than 1000 years to cause roots to form on an aerial part of a plant. Air layers may be made in the spring on wood of the previous season's growth or late in summer on partially hardened shoots. It works very well in propagating Rubber Plants (Ficus Elastica). The principal difficulty of this method is keeping the rooting medium properly moistened.

Questions for Study and Discussion:

1. What is layering?
2. Why may roots be formed by this process?
3. Why is layering often a more successful method of propagation for certain plants than propagating by cuttings?
4. Root formation by the layering process depends upon what 3 conditions?
5. Give 3 advantages and 3 disadvantages of this process of plant propagation.

Reference: Hartman & Kester, PLANT PROPAGATION. pp. 399-409.

Materials Needed:

1. One rubber plant for every two studetns.
2. Budding knives.
3. Sphagnum moss.
4. Pieces of polyethylene plastic film, about 8" x 10" square.
5. Florist's ties or tape to seal the ends.
6. Pruning shears.

What To Do	How To Do It
1. Girdle or cut the bark of the stem at a point 6-12" from the tip end.	a. Using a budding knife, make two circular cuts into the bark approximately 3/4" wide, deep enough to cut into the cambium layer. Remove this section of bark from the branch, and, using the knife, scrape the stem to insure complete removal of the cambium layer. This insures that healing will not prevent

			rooting. Or, using the knife, make a slanting cut 2" long up and to the center of the stem and insert a piece of wood or sphagnum to keep the two surfaces apart.
2.	Enclose the exposed surfaces with two handfuls of slightly moistened sphagnum moss.	b.	Take the required amount of moss and place in a gallon jar. Fill jar about ½ full of water. Collect the moss and squeeze out the excess moisture.
3.	Take a piece of plastic film about 8-10" square and wrap carefully about the branch to completely cover the spagnum moss.	c.	Fold the ends as in wrapping meat with the fold placed on the lower side. Twist the ends of the plastic to prevent water seepage.
4.	Seal the ends with adhesive, waterproof electrician's tape, budding rubbers, or florist's ties to prevent leakage and drying out of the moss.	d.	Start the wrapping well above the end of the plastic to insure closing of the ends-especially the upper end.
5.	Remove the layer from parent plant. Observe root formation through the transparent plastic. Time varies from 2-3 months, dependent upon species and layering techniques. If the moss appears to be dry, reopen the end and syringe the moss just enough so it is damp.	e.	Removing the layer from parent plant even though well rooted represents a critical period in the life of the new plant. Usually the root system is small in comparison to the leaf surface. Using the shears, severely prune the top to bring in line with root system. Transplant new plant into suitable container using a sand and peat mixture
6.	Place plant under misting system. As the root system gradually develops, begin the hardening off process.	f.	Misting helps reduce transpiration and prevents losses. Observe the vigor of the plant and the presence of new leaves and/or shoots. Remove from the mist, hand water daily, place in lath house and water as conditions demand.

Observations:

1. Number of air layerings attempted: ____________
2. Number of air layerings that rooted: ____________
3. Days needed for root growth to start: ____________
4. Days needed before plant was ready to be removed from parent plant: _______
5. Percentage of strong plants resulting from layering attempts: __________
6. Remarks:

MAJOR AREA: HORTICULTURE

UNIT: GROWING VEGETABLES IN THE GREENHOUSE

OBJECTIVE: To develop in the student knowledge and skills necessary, for efficient production of vegetables in the greenhouse.

SUGGESTED TEACHING TECHNIQUES:

I. Demonstration of required skills.
II. Discussion questions and assignment of references.
III. Field trip to greenhouse.

COMPETENCIES TO BE DEVELOPED:

I. Variety selection
II. Soils
III. Fertilizer
IV. Seedbed preparation
V. Insect and disease control
VI. Irrigation
VII. Transplanting
VIII. Temperature control
IX. Harvesting

    A. Timing
    B. Trimming
    C. Grading
    D. Packing
    E. Light
    F. Marketing

X. Other factors or considerations

EVALUATION:

I. Objective type test.
II. Check each student out on the skills taught by having them demonstrate to instructor.

MAJOR AREA: HORTICULTURE

UNIT: MEDIA FOR VEGETABLE PRODUCTION IN THE GREENHOUSE

OBJECTIVE: To teach the student the fundamentals of soil fertility, which is necessary for success in the growing of any crop.

TEACHING TECHNIQUES:

I. Demonstration of capillary movement of water in soil.
II. Pass out to the students soils of different textures and have them wet soil and feel textures.
III. Demonstrate sterilizing soils by steam and chemicals.
IV. Demonstrate to students how to take soil samples. (Explain to students where soil test may be made--Land grant colleges, private labs., etc.)
V. Demonstrate and explain soil pH.

SUGGESTED ORDER OF PRESENTATION:

I. Soil defined
II. Composition of soils (sand, silt, clay, organic matter)
III. Structure
IV. Texture
V. Permeability
VI. Soil air and water
VII. Granulation
VIII. Fumigation (chemicals and steam)
IX. Soil mixtures (desirable ratio of sand, silt, clay, and organic matter)
X. Loam (defined)
XI. Vermiculite
XII. Peat moss
XIII. Compost
XIV. Manure
XV. Pore space
XVI. Soil pH
XVII. Other considerations

EVALUATION:

I. Objective type test
II. Observation of students to see that he can put into practice, those things which have been demonstrated to him.

REFERENCES:

Vegetable Production, Knott, handbook, John Wiley and Sons.
Kiplinger-Nelson, Commercial Flower Forcing, McGraw-Hill.
Flower and Plant Production in the Greenhouse, Nelson, Interstate Printers.
The Ball Red Book. George T. Ball.
[illegible] greenhouse [illegible]
[illegible] Bulletin No. [illegible], Ball Box 335, [illegible].

MAJOR AREA: HORTICULTURE

UNIT: POTTED PLANTS IN THE GREENHOUSE

OBJECTIVE: To develop the knowledge and skills necessary to select varieties, soil, fertilizer, pest and disease control, marketing, and environment controlled measures needed for growing plants.

SUGGESTED TEACHING TECHNIQUES:

I. Field trips
II. Demonstrations
III. Overhead projector
IV. Outside men on different phases of potted plant growth
V. Films and slides
VI. Supervised reading

SUGGESTED ORDER OF PRESENTATION:

I. Selecting the kind of plants (or varieties).

   A. Chrysanthemums
   B. Daffodils
   C. Poinsettia

II. Selecting suitable soil.
III. Kind and amount of fertilizer.
IV. Type of pots suitable for plant production.
V. Temperature for proper growth.
VI. Water and humidity.
VII. Photoperiod and light in general and crop response.
VIII. Growth regulating chemicals.
IX. Pest and disease control.
X. Handling and marketing at harvesting.

REFERENCES:

The references on the following page apply to this unit.

MAJOR AREA: HORTICULTURE

UNIT: SELECTING FERTILIZER FOR POTTED PLANTS

OBJECTIVE: To develop in the student knowledge and the skills necessary to select good fertilizer.

SUGGESTED TEACHING TECHNIQUES:

I. Classroom instruction
II. Field trips and demonstrations
III. Overhead projector
IV. Soil Science men
V. Films and slides
VI. Supervised Study

SUGGESTED ORDER OF PRESENTATION:

I. Selecting the kind of fertilizer

    A. Organic
    B. Inorganic

II. Determining the amount of fertilizer

    A. Soil test
    B. Tissue Test
    C. Root Growth
    D. Soubridge Test

III. Applying Fertilizer

    A. Time to apply
    B. Method of applying

REFERENCES:

Commercial Flower Forcing. Kiplinger & Nelson, McGraw-Hill.
Flower and Plant Production in the Greenhouse. Nelson, Interstate.
The Ball Red Book. Growers Talk, Technical Bulletin No. 300.
Ball Catalogue. George T. Ball, Box 335, West Chicago, Illinois 60185.
Hints for Forcing. Associated Bulb Growers of Holland-Hellegom, Holland
A One Year Greenhouse Functional Experience Course of Study. Pennsylvania University.

MAJOR AREA: HORTICULTURE

UNIT: NURSERY MANAGEMENT

OBJECTIVES:

I. To provide the student with the basic skills in organizing and establishing a nursery.
II. To enable the student to recognize the management skills required to operate a nursery successfully.
III. To give the student the evolution of nurseries.
IV. To give the student the fundamentals of selling in the nursery business.
V. To acquaint the student with the practices of salesmanship needed in the nursery business.
VI. To acquaint the student with what the nurseryman should know about the law.
VII. To acquaint the students with the practices of publicity in the nursery business.
VIII. To familiarize the student with factors to consider in starting a nursery.
IX. To make available to the student the procedure for establishing a nursery office.
X. To present to the student the technical skills involved in the nursery business.

    A. Care in planting
    B. Culture in the nursery
    C. Moving and storing nursery stock
    D. Grading, storage, and shipping of nursery stock
    E. Pest control and plant quarantine of nursery stock

SUGGESTED TEACHING TECHNIQUES:

I. Take the students on a tour of the existing nurseries in the surrounding area.
II. Give the class study questions to answer.
III. Give the class reading assignments.
IV. Have the students collect literature supplied by nurseries.
V. Use color slides and films on nurseries.
VI. Have the students compile a merchandise manual on one particular nursery product.
VII. Have a nurseryman to come in and talk to the students about the nursery business.

SUGGESTED ORDER OF PRESENTATION:

I. Introduction to the nursery business

    A. Definitions

        1. Nursery--A place or an establishment for the raising or handling of young plants until they are ready for more permanent planting.
        2. Nursery Management--All of the phases of an industry which is highly specialized involving hundreds of individuals and companies. These function in retail and wholesale handling of general and speciality lines including seedlings, cuttings, grafts, buds,

layers, bulbs, roots, rooted cuttings and plants, shrubs, vines and many kinds of trees to be utilized ultimately for fruit, ornamental, or other purposes. As in any business, it requires training experience and good judgement to succeed.

B. Organizations of nurserymen
C. Classifications of nurseries

1. Ornamental nursery
2. Fruit tree nursery
3. Fruit seedling nursery
4. Forest tree nursery
5. Herbaceous perennial nursery
6. Bulb nursery
7. Berry nursery
8. Rock garden nursery

D. Classification of nurserymen

1. Seed collectors
2. Seedling growers
3. Propagation
4. Growers for budding and grafting
5. Bulb growers
6. Perennial growers
7. General growers

E. Classification of nurseries as to extent and nature of the business they are engaged in

1. Retailer
2. Wholesaler
3. Brokers and dealers
4. Agents
5. Landscape nurserymen
6. General nurserymen

F. Nursery Sales

1. Direct
2. Catalog
3. Contract

II. Evolution of Nurseries

A. Ancient Gradeners
B. Medieval Gardeners
C. European Nurseries
D. American Colonial Gardens
E. First American Nurseries
F. Expansion of Nurseries
G. Modern Nurseries Beginning

III. Starting the Nurseries

A. Location

- B. Selection of Site
- C. Soil Types
- D. Soil Water
- E. Cultivation
- F. Cover Crops
- G. Soil Fertility and Reaction
- H. Fertilizers
- I. Soil Preference
- J. Temperature
- K. Wind

IV. Establishing a Nursery Office

- A. Appearance
- B. Office Equipment

    1. Desk
    2. Filing Equipment
    3. Machinery

- C. Office Records and Files

    1. Mailing List
    2. Stock Record
    3. Catalog File
    4. Library
    5. Order System
    6. Accounting System
    7. Correspondence File
    8. Advertising Record

V. Fundamentals of Selling

- A. Letter Writing
- B. Points on personal salesmanship

    1. Determine the conditions favorable to securing customer's attention.
    2. Analyze the customer's attitude.
    3. Keep the "I am working for you" attitude.
    4. Attract attention to ones goods.
    5. Meet objectives and even anticipate them.
    6. Mention price diplomatically.
    7. Close the sale quickly.

VI. Practices of Publicity

- A. Advertising Budget
- B. Direct Publicity
- C. Indirect Advertising

VII. The Practices of Salesmanship

- A. Grading (leveling)
- B. Lawn making

- C. Supplying the Stock
- D. At Planting Time
- E. Tree Cleaning, Pruning, etc.
- F. Cleaning up
- G. Fertilizer
- H. Profit

VIII. The Nurseryman and the Law
IX. Planning for Planting
X. Buying for Planting
XI. Care in Planting

- A. The growing of seedlings

  1. Purpose of seedlings
  2. Seed collecting
  3. Seed storing
  4. Seed stratification
  5. Seed dormancy
  6. Planting of seeds
  7. Protecting seedlings

- B. Propagation by vegetative methods

  1. Cuttage
  2. Root promoting chemicals
  3. Layerage

     a. Mound (stool)
     b. Tip (simple)
     c. Trench (furrow)

  4. Graftage (grafting and budding)
  5. Propagation procedures
  6. Dwarf trees

XII. Culture in the Nursery

- A. Nursery preparation
- B. Laying out
- C. Seedbeds
- D. Transplant beds
- E. Nursery rows
- F. Nursery schedules
- G. Transplanting
- H. Labeling
- I. Harding off
- J. Dormancy and rest
- K. Digging
- L. Test Gardens
- M. Source plants
- N. Demonstration plantings
- O. Displays

XIII. Moving and storing nursery stock

- A. Transplanting
- B. Digging
- C. Moving
- D. Heeling in
- E. Storing
- F. Preparation for shipment
- G. Treating before shipping
- H. Replanting

XIV. Grading, storage, and shipping

- A. Grading
- B. Storage essentials
- C. Storing methods
- D. Shipping of plants
- E. Care of plants after arrival
- F. Planting instructions

XV. Pest Control and Plant Quarantine

- A. Symptoms
- B. Disease
- C. Insects
- D. Weeds
- E. Plant quarantines
    - 1. Enforcement measures
    - 2. Inspection services
- F. Individual regulations
- G. Permanent surveys

REFERENCES:

Coon, Nelson, The Small Nursery, A. T. De La Mare Corp, Inc.
Duruz, Willis P., Principles of Nursery Management, A. T. De La Mare Corp., Inc.

SUGGESTED METHODS OF EVALUATION:

- I. Score the study questions the students answered.
- II. Inspect different materials collected on the subject by each student.
- III. Give a test over each teaching unit.
- IV. Evaluate and inspect the merchandise manual made by the students.
- V. Have class discussions on tour made thus finding out what each student gained from them.

MAJOR AREA: HORTICULTURE

UNIT: NURSERY MANAGEMENT - INTRODUCTION TO THE NURSERY BUSINESS

OBJECTIVES:

I. To give the students a workable definition of a nursery and nursery management.
II. To acquaint the student with what is involved in organizing a nursery.
III. To familiarize the student with the various classifications of nurseries and nurserymen.
IV. To introduce to the students the various types of nursery sales.

SUGGESTED TEACHING TECHNIQUES:

I. Take the students on a tour of a nursery in the area.
II. Use color slides or a film on nurseries.
III. Have a nurseryman come in and talk to the group.
IV. Give the class reading assignments.
V. Give the students study questions to answer.

SUGGESTED ORDER OF PRESENTATION:

I. Definitions

. Nursery - A place or an establishment for the raising or handling of young plants until they are ready for more permanent planting.

B. Nursery Management - All of the phases of an industry which is highly specialized involving hundreds of individuals and companies. These function in retail and wholesale handling of general and speciality lines including seedlings, cuttings, grafts, buds, layers, bulbs, roots, rooted cuttings, and plants, shrubs, vines, and many kinds of trees to be utilized ultimately for fruit, ornamental, or other purposes. As in any business, it requires training, experience and good judgement to succeed.

II. Organizations

In many states nurserymen are required to file a written application for a license and must guarantee to abide by the nursery laws of the state. This usually involved paying a small annual fee and having inspections made by the state authorities. Nurserymen have also organized on the local, state, and national levels for mutual benefit, and for the advancement and unification of the nursery industry. The American Association of Nurserymen is one such organization on the national level.

III. Classification of Nurseries

Nurseries are classified on the basis of the kind of plants produced.

A. Ornamental Nursery
B. Fruit Tree Nursery
C. Fruit Seedling Nursery
D. Forest Tree Nursery
E. Herbaceous Perennial Nursery

- F. Bulb Nursery
- G. Berry Nursery
- H. Rock Garden Nursery

IV. Classification of Nurserymen

Nurserymen are classified according to the specialized operations in which they are engaged.

- A. Seed Collectors - Specialize in gathering seed of fruit, forest, ornamental and or shade trees. They know the sources and methods of gathering, handling, storing, shipping, and selling seeds in quantity. They know species, strains, and the best time for gathering highest quality of their seed.
- B. Seedling Growers - Specialize in growing plants from seed for one or more seasons. They have an understanding of stratification, duration, temperature, depth of covering of seeds, digging, grading, and shipping.
- C. Propagators - Specialize in the increasing of plants from bulbs, cuttings, layers, divisions, budding, or grafting. They have special techniques and good sources of varieties--knowing how to produce a high percentage in a limited time.
- D. Growers for Budding and Grafting - They understand correct planting, culture, digging, grading, and shipping.
- E. Bulb Growers - Specialize in increasing bulbs by separation, and they are experts in bulb treatment, planting, digging, and packing for shipment.
- F. Perennial Growers - Practice propagation of herbaceous perennials by division, cuttage, and growing from seed.
- G. General Growers - Grow assortment of different species and varieties, but specialize in only a few for sale to the public.

V. Classification of Nurseries as to extent and nature of the business they are engaged in

- A. Retailer - Sells a few plants or small lots to the customer directly.
- B. Wholesaler - Grows and sells to other nurseries in large quantities.
- C. Brokers and Dealers - Do not grow any of the stock themselves. They purchase it from other nurserymen and then sell to others.
- D. Agents - Solicit orders. Do not actually handle any plants themselves. Shipment is direct from the nursery to the consignee.
- E. A Landscape Nurseryman - Prepares a planting plan and sells and plants the layout.
- F. A General Nurseryman - Combines two or more of the above.

VI. Nursery Sales

- A. Direct Sales - Sale to customer in person with delivery at the nursery.
- B. Catalog - Sale is made by mail from lists and descriptions.
- C. Contract - Sale made on agreement in price according to grade. Delivery is guaranteed at a specific time and place.

REFERENCES:

Coon, Nelson, The Small Nursery, A. T. De La Mare Corp., Inc.
Duruz, Willis P., Principles of Nursery Management, A. T. De La Mare Corp., [illegible] Inc.

SUGGESTED METHODS OF EVALUATION:

I. Score the study questions the students answered.
II. Give a test over the teaching unit.
III. Have class discussions on tours and guest speakers, thus finding out what each student gained from the experiences.

MAJOR AREA: HORTICULTURE

UNIT: LAWNS AND TURF

OBJECTIVE: To develop within the student the ability to care for, maintain, and nuture existing lawns and turf.

SUGGESTED TEACHING TECHNIQUES:

I. Ask students to list several well kept and several poorly kept lawns or turfs.
II. Visit the lawns and discuss their good and poor qualities.
III. Check local school and public lawns.
IV. If possible, take a lawn somewhere near school as a demonstration and clip and water at desired rates.
V. Run the fertilizer spreader using recommended fertilizer at the desired rate.
VI. Exhibit and demonstrate materials needed in lawn care.

REFERENCES:

I. The Lawn Book, by L. N. Wise, Box 297, State College Mississippi.
II. Turf Management, by H. B. Musser, McGraw-Hill Book Company, New York, New York.
III. Better Lawns, U.S.D.A. Bulletin No. 50.
IV. Home and Garden, U.S.D.A. Bulletin No. 51.
V. Lawn Insects, U.S.D.A. Bulletin No. 53.
VI. Controlling Lawn Weeds and Herbicides, U.S.D.A. Bulletin No. 79.
VII. Lawn Diseases, U.S.D.A. Bulletin No. 61.
VIII. Better Lawns for Oklahoma, Oklahoma State University Circular E-703.
IX. Film: Use of Seed in Lawn Establishment by the Union Pacific Railroad Co.

MAJOR AREA: HORTICULTURE

UNIT: ORNAMENTAL HORTICULTURE

OBJECTIVES: To enable students:

I. To develop an understanding and appreciation of the scope and importance of horticulture as related to the social and economic welfare.
II. To develop an understanding of the basic principles and concepts of ornamental plant science.
III. To develop certain mental and performance skills necessary for comprehension and application of basic principles and concepts.
IV. To learn about occupational requirements and opportunities as well as opportunities for continuing education in ornamental horticulture.

SUGGESTED TEACHING TECHNIQUES:

I. Read text material and answer study questions
II. Field trips
III. Perform skills involved in units
IV. Discussion
V. Overhead projector
VI. Slides
VII. Use of resource personnel
VIII. Charts

SUGGESTED ORDER OF PRESENTATION:

I. Introduction

    A. Ornamental horticulture defined
    B. Expanding interest and need for ornamental horticulture
    C. Opportunities - Education and employment

II. Plant Botanical Information

    A Terminology
    B. Plant anatomy

        1. Roots
        2. Stems
        3. Leaves
        4. Blossoms and fruits

    C. Plant physiology - effects on growth of:

        1. Temperature
        2. Light
        3. Day light

    D. Plant Ecology

III. Ornamental Plant Classification and Identification

    A. General plant classification

      1. Trees
      2. Shrubs
      3. Flowers

   B. Use of identification key
   C. Identification of trees

      1. General types

         a. Shade
         b. Ornamental
         c. Fruit

      2. Growth habits

         a. Heights - 45 feet and up
         b. Heights - 25 feet and up
         c. Heights - 15 feet and up
         d. Heights - less than 15 feet

   D. Shrubs

      1. General types

         a. Flowering
         b. Foliage
         c. Fruiting

      2. Growth habits

         a. Heights - 15 feet to 18 feet
         b. Heights - 10 feet to 15 feet
         c. Heights - 5 feet to 10 feet
         d. Heights - Less than 5 feet

   E. Evergreens

      1. Narrow leaf; broad leaf

         a. Color
         b. Growth habits

            (1) Spreading
            (2) Upright

IV. Planting Practices

   A. Time
   B. Care of stock from time of purchase until setting
   C. Methods of planting
   D. Watering

V. Packaging and Storage

   A. Storage of plants
   B. Packaging of plants

    1. Containers
    2. Balling

VI. Fertilizers and Conditioners for Ornamental Plants

  A. Conditioners
  B. Fertilizers

VII. Pruning and Maintenance of Ornamental Plants

  A. Trees
  B. Shrubs
  C. Evergreens

    1. Narrow leaf
    2. Broad leaf

  D. Tools needed

VIII. Annual and Perennial Flower Plants

  A. Annual
  B. Perennial

IX. Diseases, Insects, and Weed Control

  A. Disease

    1. Bacterial
    2. Fungus
    3. Virus

  B. Insects

    1. Chewing
    2. Sucking

  C. Weed control

    1. Manual
    2. Chemical

REFERENCES:

Trees and Shrubs for the southwest University of Georgia Press,-Wigginton.
Ornamental Trees. Evelyn Maino and Frances Howard, University of California Press,
Laboratory Exercises in General Horticulture. J. B. Edmond, William C. Brown Co.
Laboratory Manual in Horticulture. Ervin Denisen & Harry Nichols, Iowa State University Press.
General Horticulture. Shoemaker, Lippincott,
Fundamentals of Horticulture by Edmond, Senn, Andrews, McGraw-Hill.
Grounds Maintenance, Conover, F. W., F. W. Dodge Corp., New York, 1958.
Hottes, Alfred C., The Book of Shrubs, A. T. De La Mare Co., Inc., New York.

Hottes, Alfred C., The Book of Trees, A. T. De La Mare Co., Inc., New York.
Levision, J. J., The Home Book of Trees and Shrubs, Alfred A. Knopf Co., New York.
Shurtleff, Malcolm C., How to Control Plant Diseases, The Iowa State University Press, Ames, Iowa, 1962.
Swain, Ralph B., The Insect Guide, Doubleday and Co., Inc., Garden City, New York.
Wyman, Donald, Vines and Shrubs for American Gardens and Homes, The Macmillan Co.
Insects, The 1952 Yearbook of Agriculture.
Trees, The 1949 Yearbook of Agriculture.
Controlling Insects on Flowers, Agri. Information Bulletin No. 237, 80 pages, 1962, 40¢.
Plant Diseases, The 1953 Yearbook of Agriculture.
Shade Tree Pruning, Tree Preservation Bulletin No. 4, National Park Service. U.S. Department of the Interior, Washington, D. C.

MOVIES, SLIDES, AND FILMSTRIPS:

I. Movies:

"Life of a Plant," 10 min. Portrays growth of flowering pear plant by time-lapse photography. Germination and growth are shown. (1)
"Making the Most of a Miracle" 27 min. Color, Portrays germination and growth of green plant and its importance to mankind. (1)
"Mysteries of Plant Life" 21 min. Filmed by time-lapse photography through microscopes, the hidden secrets of flowers and plants are revealed. (2)

II. Slides

Trees and Shrubs Identification and judging slides, Oklahoma State University Horticulture Department.

III. Filmstrips

Importance of Landscaping, 47 frames, color, $6.00; shows improvement by ornamental planting, foundation, boder, hedge and bracing of trees; Colonial Film and Equipment Co., 71 Walton St., N.W., Atlanta, Georgia (No loan - sale only).
Characteristics and Uses of Different Ornamental Plants, 89 frames, color, $6.00 (Same reference as above), Common and botanican names, growth habits, climate and soil adaptation, and most appropriate uses of common shrubs.
Selecting and Arranging Trees and Shrubs, 62 frames, color, $6,00 Colonial film and Equipment Co., 71 Walton St., N. W., Atlanta, Georgia, (No loan - for sale only).
Procedure for Planting Shrubs, 44 frames, color, (Same source as above), $6.00, Procedure for taking up shrubs, preparing ground placing and planting.

Sources of Movies:

Visual Aids Film Library, Ricks Hall, N. C. State College, Raleigh, N. C.
Tuloma Gas Products Company, P. O. Box 591, Tulsa 2, Oklahoma.

MAJOR AREA: HORTICULTURE

UNIT: PLANTING AND TRANSPLANTING

OBJECTIVE: To develop and acquaint the student with skills and knowledge of planting and transplanting.

SUGGESTED TEACHING TECHNIQUES:

I. Plant and transplant ornamental plants
II. Discussion
III. Overhead projector
IV. Answer study question from text

SUGGESTED ORDER OF PRESENTATION:

I. Principles to observe when planting and transplanting

  A. The hole should be dug wide enough and deep enough to permit the roots to spread without crowding.
  B. Unless it is known that the topsoil will extend to the depth of the hole to be dug, the topsoil and subsoil should be kept separate.
  C. The plant (except balled and burlapped and canned stock) should be planted slightly deeper than it stood in the nursery row.
  D. The soil should be tamped firmly about the roots or soil ball except for the top few inches.
  E. Trees over four feet high should be braced to prevent movement until the tree is established.
  F. The plant should never suffer from lack of water during the first year after planting.

II. Procedures of planting and transplanting

  A. Planting balled and burlapped stock

    1. Dig the hole 8-12 inches wider than the ball and 6-8 inches deeper.
    2. Place top soil in one pile and the subsoil in another pile.
    3. Set the plant in the hole and fill 2-3 inches from the top.
    4. Pack soil firmly and water.
    5. After the water has gone down loosen the burlap around the trunk. Do not try to remove the burlap.
    6. Fill the hole with top soil until the ball is barely covered, but do not pack.
    7. With excess soil construct a water basin.

  B. Planting and transplanting bare root stock

    1. Dig the hole large enough to insure plenty of space surrounding the roots.
    2. Loosen soil in bottom of hole.
    3. Back fill the soil until about three fourths full, to insure that the plant will set deeper than it did in the nursery.
    4. Grasp the plant and lift up to insure good contact around the roots.

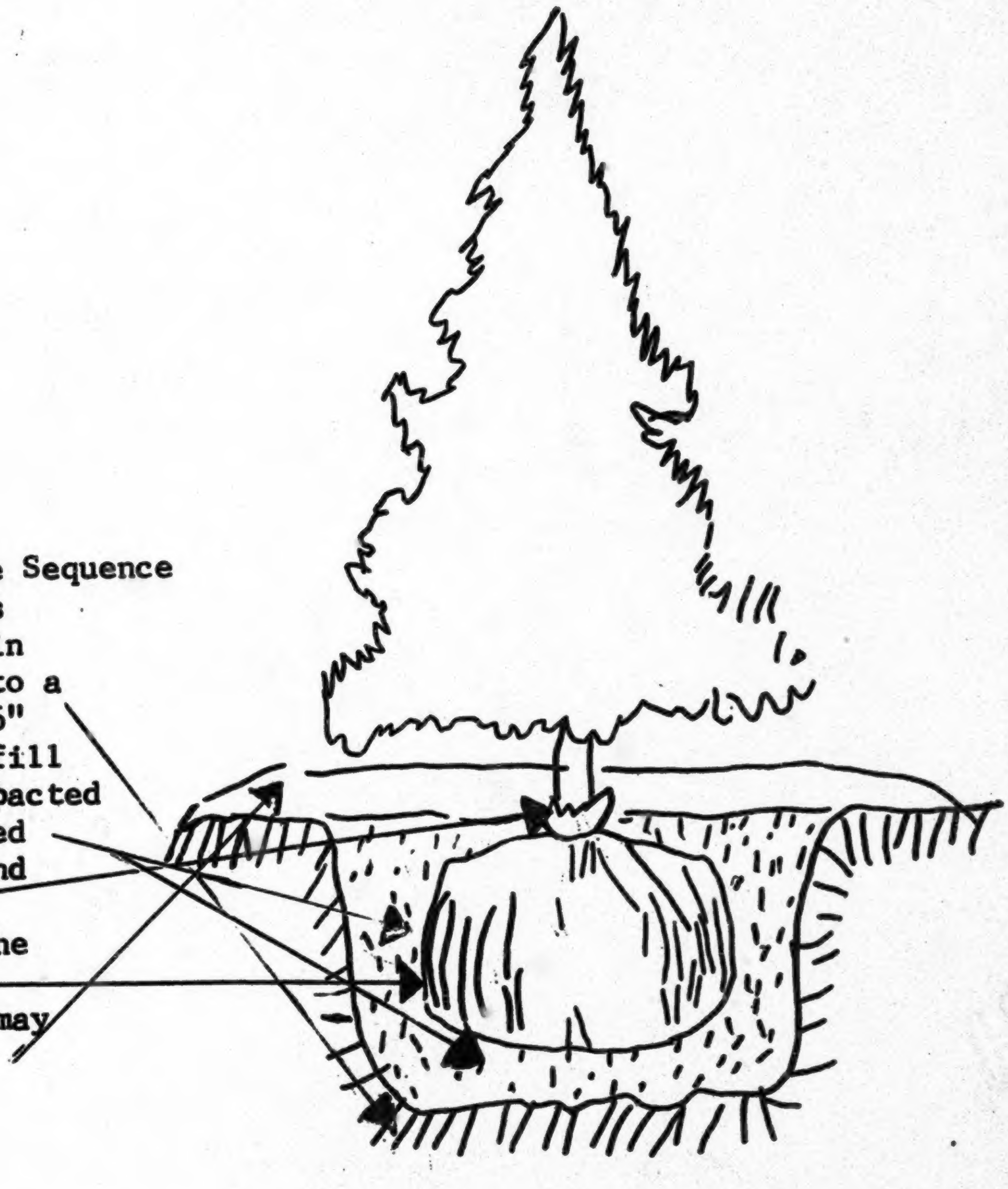
5. Tramp the soil firm and fill the hole with water.
6. After the water has soaked in finish filling the hole with top soil.
7. Construct a water basin around the plant.

EVALUATIONS:

I. Test over text material
II. The instructor should have several bare root, balled and burlapped, and canned plants available for students planting practice.

Figure 1

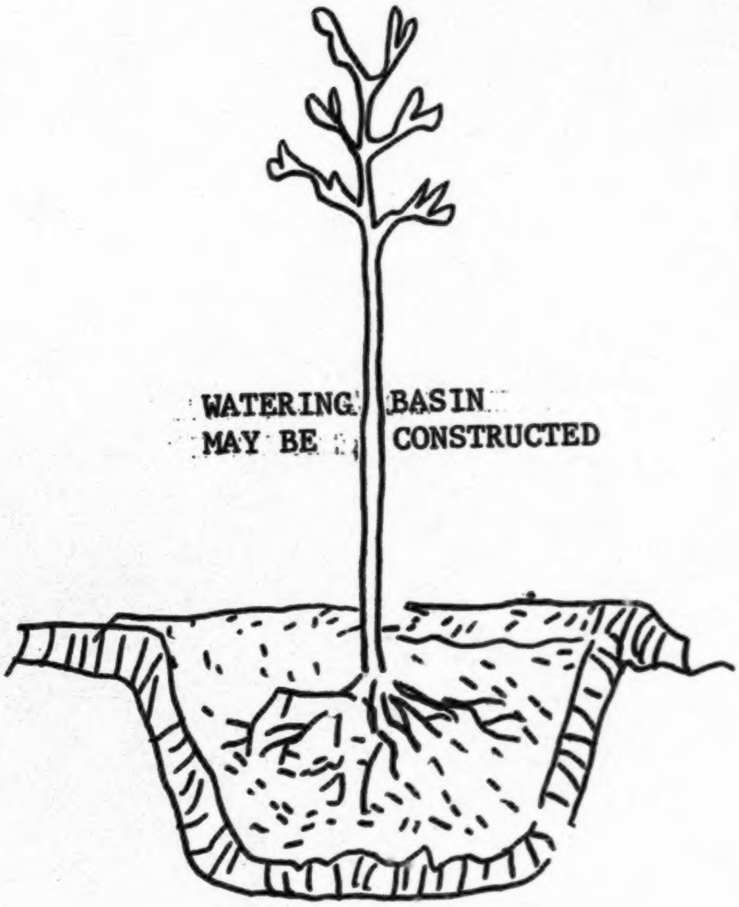
Planting Balled & Burlapped Stock



NOTES - Numbers Denote Sequence of Planting Operations

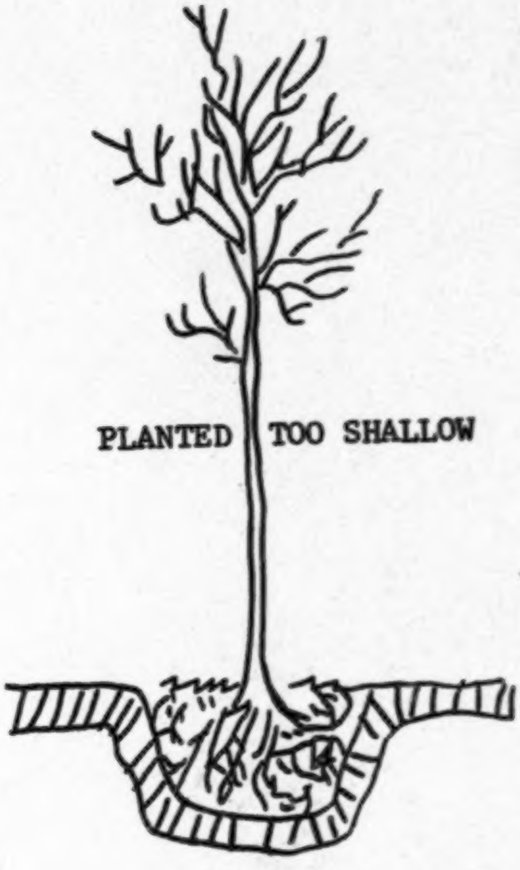
1) Loosen subsoil in bottom of hole to a depth of 4" to 6"
2) 6" minimum backfill of topsoil, compacted and water settled
3) Untie cord around the trunk
4) Do not remove the burlap
5) Watering basin may be constructed

Figure 2


WATERING BASIN
MAY BE CONSTRUCTED

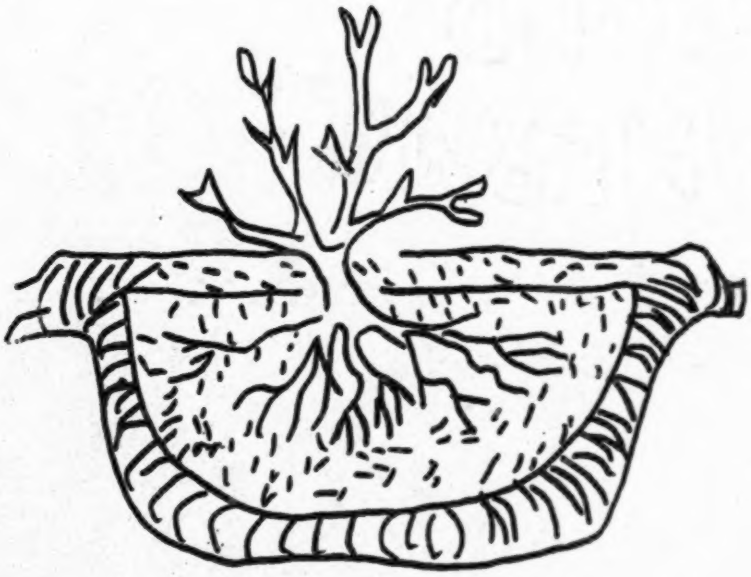
ROOTS IN NORMAL POSITION

RIGHT


PLANTED TOO SHALLOW

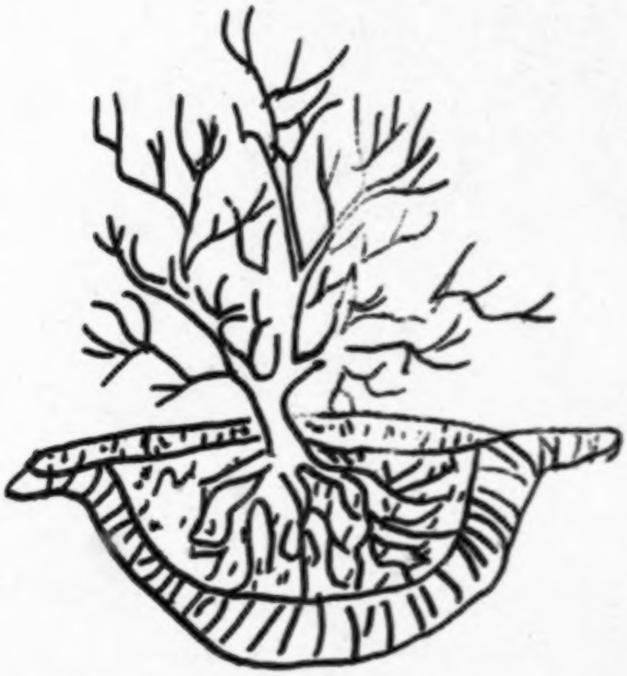
ROOTS CROWDED

WRONG



LOOSENED SUBSOIL

RIGHT



HARD SUBSOIL

WRONG

MAJOR AREA: HORTICULTURE

UNIT: LANDSCAPE DESIGN

OBJECTIVES:

I. To encourage students to gain a knowledge of the attractive use of plant material.
II. To encourage students to develop a feeling of pride and joy in the home by making the surrounding more attractive.
III. To appreciate the landscape beauty of the open country, parks, and other surroundings.

SUGGESTED TEACHING TECHNIQUES:

I. Trips to well landscaped homes to observe.
II. Trips to nursery to study plant material.
III. Students make leaf collection of plant material that can be used in area--to better associate and learn the plants.
IV. Students develop a "before" and "after" map or plan of their own home showing improvements to be made--which may be done over a period of years.

COMPETENCIES TO BE DEVELOPED:

I. Developing the landscape plan.
II. Learning plant material that is available and that can be grown in this area for landscaping.
III. Establishing the foundation planting.
IV. Choosing shade trees.
V. Arranging the foreground and background.
VI. Border, boundary, and screen planting.
VII. Placing shrubs for specimens accent points.
VIII. Concerning hedges.
IX. Laying out walks and drive ways.
X. Selecting and placing special features.
XI. Attending to careful maintenance.
XII. Learning terms commonly used.

REFERENCES:

Practical Horticulture. Shoemaker, Teskey.
Approved Practices in Beautifying the Home Grounds by Hoover Interstate Printers and Publishers,
Oklahoma Circular 544. Home Grounds Beautification.

Films:

Basic Techniques for Home Landscaping. 12 min, 5d, color, this film deals with the three basic areas around the home (1) Public area, (2) Utility area, (3) Living area.

Source: Visual Aids Library, Ricks Hall, N.C. State College, Raleigh, N.C.

SAMPLE LESSON PLAN

LANDSCAPE DESIGN

I. Developing the Landscape Plan
II. Learning Terms

Motivation and Statements

A. The home is more than just a place to eat and sleep. Good planning can provide surroundings which are attractive, comfortable and useful

B. For every person who sees the inside of a home, several hundred persons might see the outside and surroundings. The appearance of the home grounds reflect the personalities and ways of life of those who live in the house.

C. The study of nature and the work done by others can help greatly in making landscape improvements. The person who is a close observer can gain much by merely observing his surroundings. It has been said that a wise man sees more by a mere visit to a brook than a fool sees on a trip around the world.

D. After studying bulletins, magazine articles, books, and other materials, one should ask himself some of the following questions about his home grounds surroundings:

1. Are walks and drives located in the most useful, attractive locations?
2. Is there a need for a general clean-up of front and back yard and surroundings? Is the trash and garbage disposal area hidden from full view?
3. Are there too many trees or are additional trees needed for: shade, background, or enframement?
4. Is there a good open expanse of lawn, free from scattered shrubs of flower beds?
5. Are foundation plantings too large; too close to the house; in need of thinning out; and correctly located for the house type?
6. Are existing fences and gates in good condition?
7. Is there a need for screen or border plantings?
8. Are shrub, flower beds, and other plantings located for attractiveness and ease of care? Are plant beds neatly edged?
9. Does the family need some special areas such as outdoor living room, outdoor fireplace, or other features for better home living?

Study Questions

A. How to make a "before" map.

1. Step or measure distances with a tape measure.
2. Measure the length and width of the entire area to be mapped and decide on the scale (1" -10', 1" -20', etc.) to be used.
3. Draw the yard according to its shape and show its boundaries using a definite scale.
4. Locate house as a box within the general area. Use one corner of

the house as a starting point, then draw in the rest of the wall lines from that point. Show all doors, windows, basement windows, porches, and similar structures. Also, show the height from the ground to the bottom of the windows, porch height, and other similar elevations.

5. Locate all other buildings or structures on the plan.
6. Show the location of trees, shrubs, flower beds, or other features on the plan.
7. Show, with lines or arrows, the location or direction of good and bad views from the house.
8. Show drive entrances, drives, and other such features.
9. Make notes of possible improvements while the map is being made.
10. Show on the map (a) Name, Address, and County (b) Scale used (c) Directions or north point (d) Include a list of plants on hand.

B. How to make an "after" map.

1. Make the plan the same scale as the "before" map.
2. Show improvements to be made--could be over a period of years and each year could be shown in different colors.
3. Plant symbols can be shown if desired showing adapted plants to be used.

C. What terms do we need to know?

1. Border plantings - Plantings of trees, shrubs, or flowers which not only show the boundary area, but may also serve as screens or backgrounds.
2. Screen planting - Plants grouped to hide an unsightly view, or provide privacy.
3. Foundation planting - Plants located around the foundation of the house.
4. Accent planting - A plant or group of plants that, because of color, texture, or shape, point out a certain feature, part of a house, or area.
5. Focal point - A view which stands out as the center of attraction. May be a flower border, special tree or group of shrubs, bird bath, or similar feature.
6. Special features - Special ornaments such as bird baths, pools, or bench.
7. Scale - An area reduced to normal size having the same proportions, such as 1" equals 10'.
8. Public Area - Front part of home grounds most commonly seen by the public.
9. Service Area - Home grounds area which includes such used features as clothes line, trash disposal, and others.
10. Private Area - Home grounds area for private activities, often called the outdoor living room.
11. Balled and Burlapped plants - Plants transplanted with a solid ball of earth on the roots and covered with tightly pinned burlap.
12. Bare rooted plants - Plants transplanted without a ball of soil on the roots.
13. Deciduous plants - Trees, shrubs, and vines which shed all their leaves in the fall and winter.

14.. Perennials - Plants that send up new top growth from the roots year after year, such as Shasta Daisies.
15.. Biennial - Plants which have the seeds planted one year and flowers the next year. The Hollyhock is an example.
16. Annual - Plants which must grow from seed to maturity each year. Zinnias and Petunias are examples.
17. Hedge - Plants spaced close together and sheared to a definite shape.
18. Facer plants - Low growing plants used in front of taller plants..
19. Background plantings - Plantings which show the stopping point for a view. May be trees, shrubs, or vines on a support.
20. Edging - A definite line which divides the lawn from shrub or flower beds.
21. Narrow leaved evergreen - Evergreens having needle like leaves such as the Pine or Juniper.
22. Broadleaved evergreen - Evergreen plants such as the Magnolia, and Nandina, which hold their leaves the year round.
23. Mulching - A layer of material such as compost, peat moss, or old hay, on the soil for protection against loss of moisture, and freeze damage.
24. Botanical names - A standardized method of using one standard genus and specie name instead of many locally common names for plants.
25. Native plant - A plant which is a natural part of a certain geographical area.

MAJOR AREA: HORTICULTURE

UNIT: CUT FLOWERS IN A GREENHOUSE

OBJECTIVES:

I. To show the economic importance of the production of cut flowers in a greenhouse.
II. To show the importance of having a complete understanding of the environmental requirements of each plant in order to profitably grow cut flowers in a greenhouse.

SUGGESTED TEACHING TECHNIQUES:

I. Research
II. Demonstrations
III. Insect Collections
IV. Experimentation
V. Resource Individuals
VI. Field Trips
VII. Discussions
VIII. Merchandising Manual

COMPETENCIES TO BE DEVELOPED:

I. To identify plants (cut flowers)
II. To learn what to grow
III. To make appropriate soil mixtures

    A. To understand the function of each item in a growing or rooting medium.

IV. To sterilize soil with heat and chemicals
V. To control light, temperature and moisture
VI. To propagate from seeds and cuttings
VII. To transplant seedlings and rooted cuttings
VIII. To construct and design plant supports
IX. To test soils and recognize soil deficiencies
X. To identify, control and eradicate insect pest and plant diseases
XI. To keep a program of activity in regard to time
XII. To cut flowers properly and to handle them after cutting

REFERENCES:

A Training Program for Vocational Agriculture in Ornamental Horticulture. Louisiana State Department of Education Vocational Education Division.
Flower and Plant Production in the Greenhouse. Kenmard and Nelson, Interstate Publishing.
Commercial Flower Forcing. Kiplinger, Nelson, McGraw-Hill.
Using the School Greenhouse. Pennsylvania State University College of Agriculture.

SELECTIVE BIBLIOGRAPHY

HORTICULTURE

BOOKS

Ball, George J., The Ball Red Book, P.O. Box 10175, Palo Alto, California, 94303 (used by commercial growers).

Duruz, Willis P., Principles of Nursery Management, A. T. De La Mare Corp., Inc.

Hartman, H. T. and Kester, Dale E., Plant Propagation, Principles and Practices, Prentice-Hall, Inc., 1961, Englewood Cliffs, N.J.

Hoover, Approved Practices in Beautifying the Home Grounds, Interstate Printers and Publishers.

Kenmard and Nelson, Flower and Plant Production in the Greenhouse, Interstate.

Kiplinger-Nelson, Commercial Flower Forcing, McGraw-Hill Book Company, New York.

Knott, Vegetable Production, Handbook, John Wiley and Sons.

Levision, J. J., The Home Book of Trees and Shrubs, Alfred A. Knopf Co., New York.

Musser, H. B., Turf Management, McGraw-Hill Book Company, New York.

Shoemaker, Teskey, Practical Horticulture.

Shurtleff, Malcolm C., How to Control Plant Diseases, The Iowa State University Press, Ames, Iowa, 1962.

Superintendent of Documents, U.S. Government Printing Office, Washington, D. C., Greenhouse Construction and Heating.

Wise, L. N., The Lawn Book, Box 297, State College, Mississippi.

MODULES

Module No. 7, Constructing, Maintaining and Using Plant Growing Structures, The Center for Research and Leadership Development in Vocational and Technical Education, Ohio State University, 980 Kinnear Road, Columbus, Ohio.

12 Modules in a course preparing for entry in this field, Horticulture Service Occupations, Ohio State University.

SUGGESTED PROJECTS FOR DIRECTLY RELATED MATERIALS

Since it was determined by members of the 1965 Agricultural Occupations Institute at Oklahoma State University that an adequate job of teaching Vocational Agriculture Occupations Training students could not be done without allowing class time for study of materials directly relating to each student's individual training station, the following suggestions are offered as methods for accomplishing this goal.

MERCHANDISE MANUALS

General Information:

1. The merchandise manual should be based on merchandise that the student is selling or merchandise in which he is interested.

2. The manual topic should be a broad classification of merchandise rather than a specific brand name. (Example: A manual on dairy products would not be confined to Meadow Gold products only.)

3. The title of the manual should tell at a glance what merchandise is being studied.

4. The cover of the manual should be durable and able to stand abuse with pages securely fastened within covers.

Where to find merchandise information:

1. Manufacturers.

2. Publications.

    a. Trade journals
    b. Consumer agencies
    c. Store manuals
    d. Textbooks
    e. Agricultural magazines
    f. Newspapers

3. Other sources.

    a. Customers
    b. Other salespeople
    c. Labels
    d. Salesmen who call on business where student is employed
    e. Motion pictures
    f. Field trips to agri-businesses
    g. Public library

Contents of Merchandise Manuals

1. Title page

2. Preface

3. Table of contents
4. History and background of merchandise
5. Raw materials used in manufacture of merchandise
6. Construction (this includes manufacturing process)
7. Special selling points on your merchandise
8. Special selling techniques that may be used with success in selling merchandise
9. Methods and ideas pertaining to the display of the merchandise
10. Care of the merchandise
11. Illustrative examples of good advertising of the merchandise: sketches, pictures, samples, etc.
12. Bibliography
13. Glossary of terms used to describe merchandise

Suggested Products on which Merchandise Manuals Could be Prepared:

1. Dairy products (this could be broken down further--cheese, milk, etc.).
2. Feed, seed, and fertilizer (or wheat seed, corn, etc.)
3. Insecticides
4. Farm machinery and equipment (this should be broken down further--tractors, combines, etc.)
5. Meat products (or just beef, pork, poultry, fish, etc.)
6. Horticulture products (or tomatoes, roses, chrysanthemums, etc.)
7. Herbicides

AREA OF DISTRIBUTION MANUALS

General Information:

1. The purpose of this manual is to give experience in research, selection, and organization of information for practical use in one area or phase of marketing or distribution.

2. This may be a manual on one of the broad areas of distribution, such as retailing, wholesaling, or service; or a phase of these broad areas, such as Operation of the Meat Department of a Supermarket, Operating a Locker Plant, Operating a Nursery, or Operating a Farm Equipment Business. It could also cover an activity within one of these broad areas such as Sales Promotion in the Farm Equipment Business, Credit and Collections, or Personnel Policies in Agricultural Businesses.

Where to Find Information for an Area of Distribution Manual:

1. Manufacturers

2. Publications

   a. Trade journals
   b. USDA
   c. Textbooks
   d. Agricultural magazines
   e. Newspapers

3. Other sources

   a. People engaged in specific type of business
   b. Field trips to agricultural businesses
   c. Public library

Contents of Area of Distribution Manuals

1. Title page

2. Table of contents

3. Preface

4. History and background of business or specific area of business covered in manual

5. The rest of the body of the manual will vary according to the subject chosen. Outline will have to be compiled after reference sources have been investigated.

6. Illustrations at various intervals help to get across an idea or point.

7. Bibliography

8. Glossary of terms related to subject covered

Suggested Topics for Area of Distribution Manuals:

1. Agricultural Governmental Agencies
2. Livestock Marketing
3. Meat Processing
4. Veterinary Practice
5. Ranch Management
6. Farm Management
7. Management of Farm Cooperatives
8. Managing a Farm Equipment Business
9. Owning and Operating a Locker Plant
10. Operating a Greenhouse and Nursery

INDIVIDUAL ASSIGNMENTS BASED ON SPECIFIC REFERENCE MATERIAL

1. The University of Texas has a limited amount of material that would be valuable to this program if there were boys employed in that particular business. It has been developed throughout the years for Distributive Education, but material has been developed in the following areas that would be helpful to the student in the cooperative agricultural occupations program.
    a. Grocery Merchandising Kit (with particular emphasis on the unit on meat products)
    b. Service Station Kit
    c. Feed, Seed, and Supplies
2. The type of material developed at Ohio State which will be available at a later date might lend itself to this type of study.
3. Also, USDA bulletins that you have available in your departments on various agricultural products could be used for reading assignments, with the individual assignment sheet completed by the student.
4. An example of an individual assignment lesson sheet, as used in distributive education, is listed on the next page. You'll find this a very versatile teaching tool for individual study and will be limited only by the imagination and resourcefulness of the teacher.

DIRECTLY RELATED MATERIAL

VOCATIONAL AGRICULTURE OCCUPATIONS TRAINING

INDIVIDUAL ASSIGNMENT
LESSON SHEET

Area of Study______________________________ Student____________________________
(Ex: Service Station, Food
Store, etc.)

Unit_________________________________ Date__________ Lesson Number____________

Topic:

Objective:

Reference:

Assignment:

PUBLIC RELATIONS PROGRAM FOR
COOPERATIVE EXPERIENCE IN AGRICULTURAL OCCUPATIONS

One focal point of interest in the 1966 Agricultural Occupations Institute, Oklahoma State University, was that of developing a suitable public relations program for the cooperative experience program. In addition to the outlined public relations program listed on the following pages, the members of the Institute worked in interest areas and developed the public relations tools listed below:

SLIDES AND TAPE PRESENTATION: As the result of preliminary effort on the part of Dr. Bill Stevenson, the group selected a series of thirty 35mm colored slides which depict the various facets of the cooperative experience program. These were arranged in order related to developing, planning, and executing the program of cooperative experience in agricultural occupations. A script was prepared to accompany the slides which will be furnished to Institute members to assist them in presenting their new program to various groups and individuals in their local communities.

FLIP CHART: Several members of the group worked together and developed ideas for a professionally designed flip chart, which can be used for explaining the cooperative experience program to prospective employers, parents, school officials, and others with whom the teacher-coordinator will come in contact individually. The flip-chart idea has been turned over to the Oklahoma Division of Vocational Agriculture for further development.

INFORMATIVE BROCHURE: A 9" x 12" brochure, consisting of six vertical pages made by folding was designed by members of the Institute group. It explains the benefits and responsibilities of the cooperative experience program to the student, the parent, the employer, and the school. This was designed to be printed on slick finished paper in duotone of light blue and gold with black and gold lettering. Quantities of the completed brochure will be furnished to all Institute members.

TRAINING STATION RECOGNITION POSTER: A 12" x 15" poster was designed by Institute members. The purpose of the poster is to give recognition in a continuing way to employers providing training in the cooperative experience program in agricultural occupations. This, too, will be furnished in quantity to Institute participants.

INDIVIDUAL NAME TAGS: Another public relations idea developed by Institute members was that of a 2½" x 4" identification tag which could be worn at all times by cooperative experience trainees on the job. It was so designed to slip inside a protecting plastic cover which could be pinned to the student's lapel. Along with this visual identification was a card of the same size designed to be carried in the student's billfold as proof that he has released time from school for training purposes.

PUBLIC RELATIONS PROGRAM

Cooperative Experience in Agricultural Occupations

1. Prepare introductory brochure.
2. Send letter of information to prospective training stations.
3. Inform school administration: Superintendent, Principal, Counselor (in one audience, if possible).
4. Appoint Advisory Committee.
5. Inform training centers.
6. Inform students and parents.
7. Films and slides of existing programs available for public information.
8. Media:
    - TV
    - Radio
    - Newspapers:
        - Local
        - State
        - School
        - State and National FFA
    - Bulletin Boards
    - Window Displays
    - Civic Clubs
    - PTA
    - Agricultural Columnists
    - Booths at Fairs
9. Be definite in student selection procedures, use tests, etc.
10. Be selective in placing students and choosing training stations.
11. FFA Appreciation Banquet.
12. Long range planning: Add cooperative experienced expert to state staff.
13. Distribute magazine with articles favorable to the Cooperative Experience Program to waiting rooms: doctors, dentists, etc.
14. Provide identification badge with FFA emblem and name tag for students to wear on the job.
15. Provide identification poster to be placed in all training stations--recognition sign for training stations.
16. Provide identification card for advisory committee members.
17. Devise degree recognition on a state level similar to State Farmer, American Farmer, etc.

Suggested News Releases

1. Send picture of institute small group (i.e. out-of-state enrollees) with story to home town papers. Suggest state release with Stillwater, Oklahoma, date line. Suggest release for out-of-state enrollees go through state supervisors.

2. Local article about Agricultural Occupations Institute.

3. Article with picture of teacher-coordinator: "New Innovation in Vocational Agriculture".

4. Articles about neighboring Cooperative Experience in Agricultural Occupations programs in area papers to call local editor's attention to program.

5. Feature articles throughout the year (accompanied by on-the-job pictures or C.E.A.O. classroom shots).

NOTE: Suggest assistance from state vocational agriculture departments with standard news releases which have been written by professional writers.